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No. ———

IN THE

Supreme Court of the United States

OCTOBER TERM, 1992

FILMTEC CORPORATION,
Petitioner,

v.

HYDRANAUTICS,
Respondent.

Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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PETITION FOR A WRIT OF CERTIORARI

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QUESTION PRESENTED

Whether a manufacturer, sued for patent infringement by the patentee as authorized by 35 U.S.C. § 281, can avoid liability by arguing that title to the underlying invention is held by the United States, by the terms of a contract under which the Government funded the inventor's research.

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PETITION FOR A WRIT OF CERTIORARI

Petitioner FilmTec Corporation seeks review of a decision of the United States Court of Appeals for the Federal Circuit reversing a district court judgment that had found respondent Hydranautics liable for willfully infringing FilmTec's patent.[1] The court of appeals held that, even though petitioner was the owner of record of the patent in accordance with the provisions of 35 U.S.C. § 261, Hydranautics could defeat its infringement claim by showing that title to the patent belongs to a non-party to the litigation, the United States.

OPINIONS BELOW

The opinion of the United States Court of Appeals for the Federal Circuit is reported at 982 F.2d 1546, and

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[1] Petitioner is a wholly owned subsidiary of The Dow Chemical Co.; it has no non-wholly owned subsidiaries.

reprinted in Pet. App. A. The opinions of the United States District Court granting judgment for petitioner and denying a prior request for a preliminary injunction are unreported and are reprinted in Pet. Apps. B and C, respectively.

JURISDICTION

The Court of Appeals entered judgment on December 29, 1992, and denied a timely petition for rehearing on March 18, 1993. The jurisdiction of the Court is invoked pursuant to 28 U.S.C. § 1254(1).

STATUTES INVOLVED

The pertinent statutory provisions, 35 U.S.C. §§ 100(d), 261, and 281, 42 U.S.C. § 5908(a), and section 6(d) of the Saline Water Conversion Act of 1971, are reprinted in Pet. App. E.

STATEMENT

In 1981, the U.S. Patent and Trademark Office (PTO) issued to petitioner FilmTec Corporation a patent on a "reverse osmosis membrane" that separates salt from water. U.S. Patent 4,277,344 (Ct. App. J.A. 1905). This "FT-30" membrane had been invented by John Cadotte, who assigned the patent rights to FilmTec, a company he helped to found in 1978. The assignment was duly recorded with the PTO as provided in 35 U.S.C. § 261. The FT-30 was aptly characterized by the district court as a "pathbreaking discovery," which has "remained [the] state of the art" since its invention. Pet. App. 35a, 18a. By 1991, FilmTec's sales of this product approached $40 million per year. Tr., 5/8/91, at 239.

In 1990, petitioner sued respondent Hydranautics for patent infringement in the U.S. District Court for the Southern District of California. It pointed to two Hydranautics membrane products with chemistry very similar to that of the FT-30. Respondent raised a variety of defenses, including the argument that FilmTec lacked a

valid title to the Cadotte patent and that, therefore, it lacked standing to bring this infringement action.

Hydranautics' title defense was premised on the claim that the invention was actually "conceived" prior to 1978, when Cadotte was employed by the Midwest Research Institute (MRI), a non-profit organization that performed research on reverse osmosis technology under contract with the U.S. Department of the Interior. In that capacity, Cadotte had conducted experiments with various chemicals, attempting to identify combinations and manufacturing processes that would produce effective desalinizing properties in membranes. According to Cadotte's lab notebook, in one such experiment he had produced a membrane by using the same two chemicals that later formed the basis of the FT-30. Pet. App. 34a. Because of the high drying temperature Cadotte used in this MRI experiment, however, the membrane did not perform very effectively, and he later did not even remember having combined the two chemicals while at MRI. *Id.* at 34a-35a.

Respondent argued that these aspects of Cadotte's work under the MRI contract with the Government were sufficient to establish that title to the patented invention belongs to the United States. That contract had provided that MRI "does hereby grant to the Government the full and entire domestic right, title and interest in . . . any invention, discovery, improvement or development . . . made in the course of or under this contract." §§ 35(a)(14), (b)(2), Ct. App. J.A. 6362. The contract was authorized by the Saline Water Conversion Act of 1971, Pub. L. No. 92-60, 85 Stat. 159 (1971), which had been amended in 1976 to incorporate the terms of section 9 of the Federal Non-nuclear Energy, Research and Development Act of 1974 ("FNERDA"), 42 U.S.C. § 5908. *See* Pub. L. No. 94-316, § 3, 90 Stat. 694 (1976). This latter provision, which applies to a wide variety of federal research contracts in energy, environmental, and other areas, creates detailed rules governing

patent rights on resulting inventions. Among other things, it provides that when the applicable federal official makes certain specified determinations, "title to such invention shall vest in the United States, and if patents on such invention are issued they shall be issued to the United States, unless in particular circumstances the Administrator waives all or any part of the rights of the United States to such invention in conformity with the provisions of this section." 42 U.S.C. § 5908(a).

FilmTec responded to Hydranautics' challenge to its ownership of the patent in two ways. First, petitioner questioned Hydranautics' standing to raise the issue, relying on a long series of cases holding that it is no defense to patent infringement to argue that some third party has superior rights in the infringed patent. Second, it contended that Cadotte had conceived of the patented invention only after he left MRI and that, as a result, the Government had no valid claim to the patent.

On August 30, 1991, the district court held that Hydranautics was liable for infringement of petitioner's patent.[2] Based on the testimony, the court found that the patented invention was not conceived until Cadotte was working at FilmTec in 1978, and thus was not covered by the contract between MRI and the United States. Pet. App. 34a-35a. The court noted that, while one of the many experiments conducted by Cadotte at MRI involved a combination of the same two chemicals later used to form the FT-30 membrane, it was only at FilmTec that Cadotte tried the combination with a different drying temperature and got encouraging results. *Ibid.* The court specifically rejected Hydranautics' claim that Cadotte had

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[2] The court had previously denied a preliminary injunction in this case, *see* Pet. App. 36a, but had granted such an injunction in FilmTec's companion action against Allied Signal, Inc. The Federal Circuit in 1991 vacated this injunction with a decision that foreshadowed its ultimate ruling in this case. *See FilmTec Corp. v. Allied-Signal Inc.*, 939 F.2d 1568 (Fed. Cir. 1991).

engaged in a subterfuge, by keeping secret a discovery actually conceived at MRI in order to profit from it later. *Id.* at 35a. In view of this ruling on the merits with respect to FilmTec's ownership of the invention, the district court did not reach the question whether respondent had standing to raise the title issue as a defense to FilmTec's claim of infringement.

The Federal Circuit reversed, concluding that FilmTec "cannot maintain this suit" because it lacks title to the patent. *Id.* at 16a. The court first held that Hydranautics had standing to assert the alleged interests of the United States as a defense to the infringement claim. *Id.* at 7a-9a. It reasoned that if the "invention" at issue was initially conceived while Cadotte was working under the government contract, then "title to that invention immediately vested in the United States by operation of law. [Cadotte] had no right to assign it to FilmTec; the statute had divested him of all of his interest." *Id.* at 15a. Such a defect of title, in turn, was held to be a bar to any infringement claim by FilmTec, as patentee, even as against a third-party willful infringer like Hydranautics.[3]

The court of appeals also overturned the district court's conclusion that the patented invention was conceived *after* Cadotte left MRI and went to work for FilmTec. It held that, as a matter of law, Cadotte's experiment at MRI, using the same chemicals, constituted a sufficient "conception" of that ultimate invention to confer title on the United States. *Id.* at 9a-15a.

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[3] In reaching this conclusion, the Federal Circuit also described Hydranautics as a "third party beneficiary" of MRI's contract with the government, citing a provision in the Saline Water Conversion Act requiring that technology developed by contractors be "available to the general public." Pet. App. 8a-9a (quoting Pub. L. No. 92-60, 85 Stat. 159, 161 (1971)). At the same time, however, the court acknowledged that this provision had been modified through the later incorporation of FNERDA, which expressly authorizes the Government to grant *exclusive* title in any invention to its inventor or to any other person or entity. Pet. App. 9a n.4.

REASONS FOR GRANTING THE WRIT

The Federal Circuit has announced a new and far-reaching rule of patent law that is sure to have destabilizing and undesirable effects. The court held that a party sued for patent infringement can attempt to avoid liability by claiming that a *third party* has a superior right to the underlying invention, based on a prior contractual relationship with the inventor or with the inventor's former employer. The rule departs from almost a century of settled law, providing that only the party with the supposedly superior claim to the invention (here, the United States) has standing to raise that claim against the patentee. *See, e.g., McMichael & Wildman Mfg. Co. v. Ruth*, 128 F. 706, 707 (3d Cir. 1904); *Mercantile Nat'l Bank v. Howmet Corp.*, 524 F.2d 1031, 1034 (7th Cir. 1975), *cert. denied*, 424 U.S. 957 (1976). And it does so based on a novel understanding of how title to patents is obtained and conveyed—an understanding that cannot be squared with the express terms of the federal patent statutes.

The Federal Circuit's ruling will have a broad impact. It will affect the enforcement of any patent on an invention created by someone who previously worked in a related area pursuant to a contract conveying ownership of inventions conceived during the contract term. That situation arises frequently: government contracts, in accordance with federal statutes like FNERDA, routinely contain such provisions and many, if not most, private employment and consultant contracts include them as well. In every case where an inventor works under such a contract, and later goes on to invent and patent a related but improved device, an alleged infringer of the patent will now have standing to litigate the applicability of the prior contract as a potential bar to the infringement claim.

This new rule has nothing to commend it. To begin with, it gives an accused infringer an incentive to dredge up a potential claim of some third party and then pursue

a fact-based dispute (here a decade old) about when an invention was first conceived. Until such disputes are resolved, the new rule bars any effort to enforce the patent—thus functionally giving even a willful infringer immunity for an extended period of time. Moreover, unless a court is willing to resolve the title issue in the absence of one of the competing claimants, it will first have to bring a third party into the case. These problems not only will impede enforcement of valid patents but also will create substantial disincentives to entering into similar research contracts with the Government, or to hiring researchers who previously worked under such contracts.

By contrast, the traditional rule—that the only parties who may challenge a patentee's title are those who themselves claim title—is far more workable. It relied on the proposition that the party with legal title to the patent is the original patentee or the recipient of a subsequent conveyance of title (generally a recorded assignment) from the original patentee. That party, in turn, pursuant to 35 U.S.C. § 281, had the exclusive power to sue infringers, regardless of any potential claim by a third party that title to the patent was being held in breach of a preexisting obligation to transfer the patent to it. The third party itself, of course, could bring an action seeking to enforce its contract right to the patent; but that was the only way in which an ownership dispute could arise, and there was never any time when it was unclear who had the right to enforce the patent against alleged infringers.

The Federal Circuit's decision, in sum, is seriously wrong and will have serious consequences. It marks a fundamental departure from prior, established law that only this Court can rectify. Review should be granted.

I. THE FEDERAL CIRCUIT'S DECISION TO ALLOW A THIRD-PARTY CHALLENGE TO PETITIONER'S TITLE MAKES NO SENSE.

A. The novelty of the Federal Circuit's decision cannot be overstated. Until this case, a long line of precedents had consistently held that a third party's rights in a patent could not be asserted as a defense in an action for infringement brought by the original patentee or his assignee. *See Mercantile Nat'l Bank v. Howmet Corp., supra; Yablick v. Protecto Safety Appliance Corp.*, 21 F.2d 885, 889 (3d Cir. 1927); *McMichael & Wildman Mfg. Co. v. Ruth, supra*; *Mead Digital Sys., Inc. v. A.B. Dick Co.*, 521 F. Supp. 164, 166 (S.D. Ohio 1981), *aff'd*, 723 F.2d 455 (6th Cir. 1983); *Dubilier Condenser Corp. v. RCA*, 34 F.2d 450, 463 (D. Del. 1929), *rev'd on other grounds*, 59 F.2d 305, 59 F.2d 309 (3d Cir.), *cert. denied*, 287 U.S. 648, 287 U.S. 650 (1932); *Dorr-Oliver, Inc. v. United States*, 432 F.2d 447, 451 (Ct. Cl. 1970); 6 D. Chisum, *Patents* § 21.03[2], at 21-162 & n.30 (1993) (citing cases). As the Third Circuit long ago put it: "Whatever the equities between the government and the plaintiff are, they do not constitute a defense to infringement by a third party. . . . [T]he rights, whatever they may be, which *the government* may have in the invention by reason of the inventor's employment, are not available to the defendant." *Yablick*, 21 F.2d at 889 (emphasis in original).[4]

These rulings were premised on two basic principles reflected in the federal patent statutes: (1) that legal title to a patent is held by the patentee or his successor in interest, and (2) that the power to sue for infringement is an exclusive incident of legal title. *See* 35 U.S.C. § 100(d) ("The word 'patentee' includes not only the

[4] There is a clear conflict between the decision below and all of these decisions from other circuits. However, because the Federal Circuit has had exclusive jurisdiction over patent appeals since 1982, *see* 28 U.S.C. § 1295, its new approach will apply nationally.

patentee to whom the patent was issued but also the successors in title to the patentee."); *id.* § 281 ("A patentee shall have remedy by civil action for infringement of his patent."). As this Court stated 70 years ago, a patent " 'confers only upon its legal owners the right to institute proceedings for its violation. These owners are the patentee, his assignee, his grantee, or his personal representatives; and none but these are able to maintain an action for infringement in a court of law.' " *Crown Die & Tool Co. v. Nye Tool & Machine Works,* 261 U.S. 24, 40-41 (1923) (quoting 3 *Robinson on Patents* § 937). *See also Arachnid, Inc. v. Merit Indus., Inc.,* 939 F.2d 1574, 1578-79 & n.2 (Fed. Cir. 1991) (only "legal title holder," which is synonymous with "patentee" as defined in 35 U.S.C. § 100(d), may sue for infringement); 6 D. Chisum, *supra,* § 21.03[2][f], at 21-162.

Under this system, the identity of the legal title holder (patentee) is typically easy to establish: a patent issued by the PTO identifies on its face the original patentee; and any assignment of the patent is nearly always recorded with the PTO in order to protect the assignee against claims by subsequent good-faith purchasers of the same patent. *See* 35 U.S.C. § 261. Thus, at any given time, the person with the right to enforce the patent is almost certain to be a matter of public record.

To be sure, a patentee's title to the patent, or the underlying invention, may be held in breach of an obligation to someone else. Such an obligation typically arises when an inventor consents, in an employment agreement or other contract, to grant another party the rights to his future work on a given project or during a given time period. *See* 6 D. Chisum, *supra,* § 2103[2][f], at 21-162. But a prior agreement of this kind was not, until this case, viewed as affecting current legal title to the patent on subsequently created inventions. As the Federal Circuit itself recently explained: " 'The *legal* title to an invention can pass to another only by a conveyance

which operates upon the thing invented after it has become capable of being made the subject of an application for a patent.'" *Arachnid,* 939 F.2d at 1581 (quoting G. Curtis, *A Treatise on the Law of Patents* § 170 (4th ed. 1873)) (emphasis in original); *see* 35 U.S.C. § 100(d) ("patentee" authorized to sue infringers is party to whom patent issued or "*successors* in title" to that party) (emphasis added).

Under these rules, in turn, there is no basis for allowing an accused infringer to dispute the "title" of a plaintiff/patentee (unless, of course, the infringer itself has the superior claim to title arising out of a prior agreement). The question whether the patentee has breached a duty to convey the patent to someone else is simply irrelevant to the infringement action: it does not affect the plaintiff's current standing to enforce the patent, and it does not excuse any infringement committed by the defendant. *See, e.g., Hazeltine Corp. v. Electric Serv. Eng'g Corp.,* 18 F.2d 662, 668 (S.D.N.Y. 1926) ("Nor is there any merit in the claim that [the inventor's] assignee is not entitled to sue. Whatever rights the United States government may have in the invention, growing out of the inventor's employment, the patent was issued in his name, and his assignees hold the full legal title . . . .").

B. The Federal Circuit disregarded these statutory provisions and settled principles, and allowed Hydranautics to litigate the *Government's* contract claim as a defense in the infringement action, even though Hydranautics was a total bystander in this potential contract dispute and even though the Government had never itself asserted any right to FilmTec's patent. The court reasoned that the language of the MRI contract and the controlling statute (FNERDA) mandated the conclusion that there had been an instantaneous conveyance of legal title to each of Cadotte's inventions *as they were later conceived during his work under the MRI contract. See*

Pet. App. 10a; *FilmTec Corp. v. Allied-Signal Inc.*, 939 F.2d at 1573 (the court's opinion in an earlier preliminary injunction appeal in a companion case) ("[T]he contract between MRI and the Government did not merely obligate MRI to grant future rights, but expressly granted to the Government MRI's rights in any future invention. Ordinarily, no further act would be required once an invention came into being; the transfer of title would occur by operation of law.").

This conclusion is doubly flawed. First, it irrationally elevates form over substance—saying, in effect, that a pre-invention contract to convey title can give a third party a valid defense in an infringement case if, but only if, its language can be construed as an immediate conveyance of "legal" (as opposed to "equitable") title. There is simply no conceivable reason to allow *third parties* to inject an issue of title into an infringement suit, depending on the technicality of whether the underlying contractual instrument—to which it was not a party—grants an immediate right to the invention *upon* its discovery or a right to have the invention assigned *after* it has been discovered. Those distinctions, whatever relevance they might have in a dispute between the parties to the contract, have no relevance to the sensible or orderly adjudication of infringement claims against complete strangers to the contract.

In any event, the Federal Circuit's attempt to support a claim of "legal" title on behalf of the United States here is wrong even on its own terms. It is flatly inconsistent with basic principles of patent law to suggest that legal title to the patent (and the corresponding exclusive right to sue infringers) was conveyed to the Government by the MRI contract before the underlying invention was ever conceived. The patent laws expressly state that it is the "patentee"—defined as the original patentee or his successor in title—who has the exclusive right to sue infringers. 35 U.S.C. §§ 101(d), 281. Here, the

original patentee was FilmTec,[5] and it did nothing to convey title to the Government.

Moreover, it makes no sense to suggest that the MRI contract could have been a prior valid "assignment" of title to the invention. For good and obvious reasons relating to legal stability in the field of patent law, such an assignment requires a written instrument specifically describing an *existing invention*. *See* pp. 9-10 *supra*. Such a document can be, and almost invariably is, recorded with the PTO in order to protect the assignee. *See* 35 U.S.C. § 261. Here, by contrast, the Federal Circuit held that legal title to a great many inventions had been "assigned" automatically, without any actual instrument referring to specific inventions (much less patents), without even a possibility of recordation with the PTO, and without regard to the patent actually issued in FilmTec's name.

In sum, it is clear that the Government has never had more than an equitable interest in the patent here—unless something about this case warrants recognition of entirely different rules. But there is no reason whatever to conclude that Congress (in enacting FNERDA) or the Interior Department (in contracting with MRI) intended to deviate from the usual commercial practice of obtaining a contractual right to future inventions, followed by later specific assignments after the inventions exist. While the MRI contract did "grant to the government the full and entire domestic right, title and interest" in inventions covered by the contract, § 35(b)(2) (Ct. App. J.A. 6362), that language can only fairly be read as creating an equitable right to future assignment of title to independently patented inventions.

To begin with, such language has been a standard feature of government and private contracts for many years.

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[5] Under 35 U.S.C. § 152, the PTO is authorized to issue a patent to an assignee of patent rights like FilmTec.

It appeared here as part of a boiler-plate section of the MRI contract preprinted for use by many different federal agencies "in cost-type contracts for research and development with commercial organizations." *Id.* at 6350. Yet, to our knowledge, no case or commentator has ever suggested that such language is a substitute for a later formal conveyance of title.

Moreover, the governing statute, section 9 of FNERDA, does *not* provide that title "vests" in the United States as soon as an invention is conceived or created. It requires that the relevant regulatory official first make a claim to the invention based on a formal determination that it was sufficiently related to a government research contract. 42 U.S.C. § 5908(a).[6] The Federal Circuit ignored this requirement, making for itself a determination that was entrusted by statute to the executive officials that administer the contract. The court also ignored the conclusion that follows from this feature of the statute —*i.e.*, that contracts governed by FNERDA cannot be read as conveying title to anything. Because the Government's rights remain entirely contingent on subsequent events, there is every reason to suppose that what Congress intended was that the Government would ultimately claim specific inventions and *then* receive an assignment of title from the contractor.

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[6] The criteria for this determination are complex. If the inventor was employed to perform research or development work under the contract, the official must determine whether the invention is "related to work he was employed or assigned to perform," was "within the scope of his employment duties," or was made with the help of some kind of government facilities or property. 42 U.S.C. § 5908(a)(1). If the inventor was not employed as a researcher, the official must determine that the invention was nevertheless related to his work under the contract and was "made during working hours" or with the government facilities or property. *Id.* § 5908(a)(2).

Indeed, both the applicable federal regulations,[7] and other provisions in the MRI contract itself,[8] confirm that no immediate conveyance of title was intended, by referring specifically to later assignments of particular inventions to the United States. And, in this case, MRI did execute specific assignments of inventions that the Government had determined to fall within the contract. *See* Ct. App. J.A. 3729 (reprinting patent on a Cadotte invention that was assigned to MRI and then assigned to the United States). Such assignments, of course, would have been unnecessary if the Government already possessed full legal title under the contract itself.

In short, the Federal Circuit's ruling that Hydranautics has standing to challenge FilmTec's right to sue in this

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[7] The regulations implementing FNERDA as of 1977 specifically contemplated that contractors would, in their contracts, "agree[] to assign" covered inventions to the United States. 41 C.F.R. § 9-9.107-5, at 277 (1977). *See also id.* § 9-9.109-5 ("Whenever the Government acquires the entire rights, title, and interest in an invention pursuant to a contract or by operation of law, assignments shall be obtained from the inventor to the Government with the consent of the contractors, to perfect or confirm the Government's rights. The form of conveyance of title from the inventor to the contractor must be legally sufficient to convey the rights the contractor is required to convey to the Government."); 48 C.F.R. § 27.305-4(a) (1992) ("When the Government acquires the entire right, title, and interest in an invention by contract, this is normally accomplished by an assignment either from each inventor to the contractor and from the contractor to the Government, or from the inventor to the Government with the consent of the contractor, so that the chain of title from the inventor to the Government is clearly established.").

[8] *See* §§ 35(i)(2), (3) (Ct. App. J.A. 6364) (sections in which the contractor (MRI) warranted that it would "take no action which [would] impair [its] obligations to assign to the Government any invention first actually reduced to practice in the course of or under the contract" and that any inventors employed on the project would be contractually bound "to assign to the Contractor all discoveries and inventions made within the scope of their employment").

case—premised as it was on the notion that the Government obtained legal title to Cadotte's inventions without ever receiving a formal assignment—is indefensible. There is simply no basis for concluding that the United States ever intended to create some new form of instantaneous conveyance of title, or ever anticipated that title issues arising from the MRI contract might be resolved in an infringement action against a bystander like respondent rather than in the usual exclusive forum, *i.e.*, a lawsuit between the patentee (FilmTec) and the party alleged to hold a superior equitable claim (the United States). The court's reasoning for reaching such an unlikely result, moreover, is fundamentally inconsistent with the federal patent statutes and has radically altered the basic understanding of what it means to hold legal title to a patent.

II. THIS DECISION WILL HAVE SERIOUS DETRIMENTAL CONSEQUENCES IN A LARGE NUMBER OF CASES.

The decision of the Federal Circuit merits review by this Court. Even leaving aside its multi-million-dollar impact on petitioner,[9] this decision will apply to a large number of other cases. And it will produce unacceptable results in those cases.

While seemingly focussed on the MRI contract, the Federal Circuit's decision is actually much broader. FNERDA, the statute that was found to convey instantaneous legal title here, has been incorporated by reference into a whole range of other statutes. *See* 7 U.S.C. § 178j (natural rubber); 15 U.S.C. § 2511 (electric and hybrid vehicles); *id.* § 2707 (automotive propulsion); 30 U.S.C. § 1226(c) (mining and minerals research); 42 U.S.C. § 5585(b) (solar energy); *id.* § 6981(c) (solid waste disposal); *id.* § 7879 (water resources); *id.*

[9] In 1985, The Dow Chemical Co. acquired FilmTec. Relying on existing law, it paid $75 million, up to $25 million of which reflected the value of the '344 patent. Tr., 5/8/91, at 261-62.

§ 8773(f) (synthetic fuels); *id.* § 10308 (water resources). In other instances, federal statutes include "vesting" language very similar to that of FNERDA. *See* 42 U.S.C. § 2182 (atomic energy research); *id.* § 2457(a) (research on outer space). In the wake of the ruling below, therefore, work done by contractors under these programs will be deemed to have resulted in immediate vesting of legal title to inventions—and subsequent patents respecting those inventions—in the United States.[10] Infringers then will have standing to raise this argument whenever there is a colorable claim that a particular patented invention falls under such a contract.[11]

More fundamentally, it is important to understand that there is nothing unique or even unusual about the provisions of FNERDA and of the MRI contract that were construed here. It is routine for a government or private contract to provide that ownership or title to an inventor's work is "granted to" or "vested in" some other party. Such language has always been understood to be

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[10] In 1980, Congress enacted 35 U.S.C. § 202, which superseded FNERDA to the extent of providing that non-profit organizations and small businesses performing research under contract with the government generally may elect to retain title to their inventions. FNERDA, however, still governs contracts with other entities. *Id.* § 210(b).

[11] As noted above (note 3, *supra*), the Federal Circuit buttressed its decision by suggesting that Hydranautics has standing as a third-party beneficiary of the MRI contract. It pointed to language in the original Saline Water Conversion Act requiring that technology developed by contractors be made available to the public. This reasoning is highly suspect since, by 1976, the controlling statute was FNERDA, which expressly authorizes the *United States* to decide whether it will grant rights to use inventions developed under a government contract to the inventor, to third parties, or to the public at large. *See ibid.* In any event, this additional argument by the court below does nothing to lessen the broader impact of the decision. The court gave no indication that any infringers' standing to raise title issues is limited to cases where they are third-party beneficiaries of prior contracts.

consistent with an expectation of later, formal conveyances of title by assignment. Now, however, that language will be construed as effecting an immediate transfer of title. Certainly many accused infringers are likely to so argue, when faced with a suit by a patentee who previously worked under such a contract.

The widespread application of the decision below is thus inevitable, but it is also almost unthinkable. The basic purpose of locating title with the original patentee or his assignee is to provide a degree of certainty about who is authorized at any given time to enforce a patent. By contrast, once it is contemplated that legal title may be conveyed through a general agreement that precedes the creation of an invention and is entirely independent of the patent-issuance process, this certainty no longer exists.

Under such a regime, if there is any colorable argument that a patented invention actually was first "conceived" during the inventor's prior work under a government or private contract, this possibility will constitute a cloud on the legal title of the patentee. That issue, in turn, will be one that any alleged infringer will have standing to raise, even if the competing claimant has never made any claim to the patent at issue. And such a party will certainly make every effort to develop such a claim, by combing through the details of the inventor's work in the hopes of finding evidence of a prior conception of the invention. After all, if a colorable title issue can be manufactured, a ruling on the question of infringement will have to be delayed at the very least, and may even be forestalled altogether.

The necessary result of such an approach is to put many patents into legal limbo. Where the applicability of a prior contract is unresolved, there will be no person or entity with the effective power to enforce the patent. A suit brought by the patentee will be met with a chal-

lenge to its title. And a suit brought by the other potential owner will be met with the argument that it is not the "patentee" within the meaning of 35 U.S.C. § 100(d) and thus is not authorized to bring an infringement suit under 35 U.S.C. § 281. At the same time, a company seeking to obtain a license to produce the patented product will have no assurance as to who has authority to grant that license. The only beneficiary of such uncertainty is a third-party infringer like Hydranautics, which can continue to avoid liability because the power to enforce the patent has essentially "fallen between the cracks."

As a practical matter, the Federal Circuit's rule is also certain to cause research organizations to think long and hard before they either enter into contracts comparable to the MRI contract or hire people who previously worked under such a contract. After all, they will know that the cost of these decisions is opening themselves up indefinitely to arguments about their title to subsequent inventions in related areas—arguments that any accused infringer of their patents is free to raise.

Finally, one of the most baffling aspects of the Federal Circuit's ruling is its utter failure to take into account the problems associated with adjudicating a question of title with only one of the competing claimants before the court. Because Hydranautics was allowed to pursue a claim that belongs to the United States, petitioner was put in a "no-win" situation. It could lose the title issue, and lose all rights to the patent, but if it prevailed on the issue against Hydranautics, neither the United States nor any other infringement defendant would be bound: the question could be raised again and again indefinitely. At the same time, FilmTec lost the right to assert the rather obvious equitable defenses (laches, estoppel, etc.) that might have been asserted against the Government itself had it brought an action more than a decade after FilmTec's patent issued.

For these reasons, if, as the Federal Circuit has held, third-party title challenges are to become an accepted feature of patent-infringement litigation, then the competing claimant will have to be brought into each case. *See American Signal Corp. v. International Roll-Call Sys., Inc.*, 110 F.2d 942, 943-44 (4th Cir. 1940) (infringement defendant's counterclaim alleging that title rested with a third party was properly dismissed due to absence of that indispensable party); *Narda Microwave Corp. v. General Microwave Corp.*, 201 U.S.P.Q. 231 (E.D.N.Y. 1978) (defendant's infringement defense that legal title to patent had been forfeited to the United States allowed to proceed only after United States joined as a third-party defendant). The prospect of this happening routinely should, by itself, be enough to call into question any rule allowing third parties to raise a title defense in an infringement action. It makes far more sense to return to the traditional standing rule, and allow parties to decide for themselves whether they wish to pursue their own potential claims of title to patents.

CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted,

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June 15, 1993

APPENDICES

APPENDIX A

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

92-1091

FILMTEC CORPORATION,
Plaintiff-Appellee,
v.

HYDRANAUTICS,
Defendants-Appellant.

Decided: December 29, 1992

Before NIES, *Chief Judge,* SKELTON, *Senior Circuit Judge,* and LOURIE, *Circuit Judge.*

LOURIE, *Circuit Judge.*

Hydranautics appeals from the August 30, 1991 judgment and order of the United States District Court for the Southern District of California which determined that FilmTec holds legal title to Cadotte U.S. Patent 4,277,344, the '344 patent is valid, and Hydranautics willfully infringed that patent. *Filmtec Corp. v. Hydranautics,* Case No. 90-563 GT (M) (S.D. Cal. Aug. 30, 1991). Because we conclude that the Saline Water Conversion Act of 1971 provides that the United States is entitled to ownership of the '344 patent, FilmTec cannot maintain the instant suit. We therefore reverse the district court's judgment and vacate its holdings that the '344 patent is valid and infringed.

BACKGROUND

This appeal involves a patent resulting from research performed under a government contract. In 1976, the Office of Water Research and Technology in the U.S. Department of the Interior entered into a research contract (the Contract) with the North Star Division of Midwest Research Institute (MRI), a not-for-profit research organization. The purpose of the Contract was "research and development on in-situ-formed condensation polymer membranes for seawater desalination by reverse osmosis."[1] When subjected to high pressure, reverse osmosis membranes retain salt and allow water to pass through. Their performance capabilities are measured in terms of their flux and their salt rejection. "Flux" refers to the rate at which purified water passes through the membrane and may be stated in terms of gallons of water per square foot of membrane per day (gfd). "Salt rejection" refers to the percentage of salt that a membrane removes from treated water.

The government entered into the Contract with MRI under authority of the Saline Water Conversion Act of 1971 (the Act), Pub. L. No. 92-60, 85 Stat. 159, which had the broad purpose of developing means for desalinizing salt water so as to make it suitable for municipal, industrial, and agricultural uses. Section 6(d) of the Act provided that all patents resulting from contracts made pursuant to it, such as the Contract, will "be available to the general public." 85 Stat. at 161. Furthermore, Congress provided that "title to . . . inventions made or conceived in the course of or under any contract or grant pursuant to the . . . Saline Water Conversion Act of 1971 . . . shall be governed by . . . section[] 9 . . . of

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[1] These condensation polymer membranes consist of a thin polymer layer ("desalinizing layer") on a porous support. The desalinizing layer is formed in situ by initiating a reaction between an aqueous reactant and a water-insoluble reactant at the interface between them.

the Federal Non-nuclear Energy, Research, and Development Act of 1974 [FNERDA] . . . ." Pub. L. No. 94-316, 90 Stat. 694 (effective date June 22, 1976). Section 9 of the FNERDA provides in pertinent part:

> (a) Whenever any invention is made or conceived in the course of or under any contract of the Administration . . . and the Administrator [of the Energy Research and Development Administration] determines that—
>
> > (1) the person who made the invention was employed or assigned to perform research . . . and the invention is related to the work he was employed or assigned to perform, or that it was within the scope of his employment duties . . .
>
> title to such invention shall vest in the United States, and if patents on such invention are issued they shall be issued to the United States, unless in particular circumstances the Administrator waives all or any part of the rights of the United States to such invention in conformity with the provisions of this section.
>
> (b) Each contract entered into by the Administration with any person shall contain effective provisions under which such person shall furnish promptly to the Administration a written report containing full and complete technical information concerning any invention . . . which may be made in the course of or under such contract.

Pub. L. No. 93-577, 88 Stat. 1878, 1887-88. Section 9(g) of the FNERDA further provides that the Administrator may grant exclusive or partially exclusive licenses in any invention to which title is vested in the United States. 88 Stat. at 1889.

In light of Congressional intent to ensure that the government receive title to all patents resulting from re-

search contracts authorized by the Saline Water Conversion Act, the Contract explicitly provided that MRI

> does hereby grant to the Government the full and entire domestic right, title and interest in [any invention . . . [conceived or first actually reduced to practice] in the course of or under this contract or any subcontract].

In addition, the Contract required MRI to

> submit . . . written information concerning the conception or actual reduction to practice . . . of every invention made by [MRI] pertaining to the work called for in this contract which was conceived or first actually reduced to practice . . . during . . . the term of this contract, which invention would be a Subject Invention if made under this contract, but which the Contractor believes was made outside the performance of work required under this contract.

The Contract further provided that

> [f]ailure to furnish such information [] shall, in any subsequent proceeding, place on the Contractor the burden of going forward with the evidence to establish that such invention is not a Subject Invention. If such evidence is not then presented the invention shall be deemed to be a Subject Invention.

The Contract became effective on July 15, 1976 and extended through January 15, 1978. MRI hired John E. Cadotte to carry out the reverse osmosis membrane research contemplated by the Contract. On November 17, 1977, Cadotte reported in his MRI laboratory notebook the formation of three composite polyamide membranes, all made by the interfacial reaction of trimesoyl chloride (TMC), an aromatic acyl chloride having three acyl chloride groups, and metaphenylene diamine (MPD), an aromatic diamine, at 130° C. Cadotte tested two of these TMC/MPD membranes for their ability to desalinize seawater at 1500 psi. Cadotte found that these membranes

exhibited fluxes of 12.7 gfd and 9.5 gfd with salt rejections of 95.0 and 88.5%, respectively. The record does not indicate that MRI reported this work to the government as required by the Contract.

In the summer of 1977, while he was still working at MRI, Cadotte and other MRI employees began to discuss forming a new company called FilmTec Corporation to develop new reverse osmosis membrane technologies. On December 20, 1977, E.E. Erickson, the president of Film Tec, sought a research contract for FilmTec with the Office of Water Research and Technology. In the research proposal that Cadotte helped to prepare, Erickson stated that former MRI staff members would carry out the proposed research program as a "follow-on" to the recent research at MRI under the Contract. Erickson further stated that "FilmTec was founded by [MRI] staff as a spin-off of MRI to conduct research and development and to manufacture products based on the polymer film technology that was developed at MRI."

Cadotte left MRI on December 31, 1977 and joined FilmTec as one of its four co-founders. On February 23, 1978, working in FilmTec's research laboratory, he reacted TMC and MPD and formed two composite reverse osmosis membranes. Cadotte's February experiments at FilmTec essentially duplicated his November experiments at MRI: he reacted the same proportions of TMC and MPD in the same manner for the same amount of time. The sole difference between the November and February experiments was that Cadotte reduced the membrane drying temperature from 130° C to 100° C. As a result, the TMC/MPD membranes that Cadotte produced in February exhibited fluxes of 13.1 and 11.0 gfd at a 98.0% salt rejection rate, better than those obtained the previous November.

Approximately one year later, on February 29, 1979, Cadotte filed a patent application relating to his interfacially polymerized reverse osmosis membranes. Cadotte

assigned his rights in that application and any resulting patent to FilmTec, which duly recorded this assignment in the United States Patent and Trademark Office. Cadotte's patent application ultimately issued as the '344 patent, entitled "Interfacially Synthesized Reverse Osmosis Membrane." FilmTec currently has record title to the '344 patent. The government has not taken action to determine its rights to the '344 patent under the Contract.

Hydranautics manufactures two reverse osmosis membranes known as CPA-2 and HPM. HPM is formed by the interfacial condensation of, inter alia, TMC and MPD, while CPA-2 is also formed from TMC and MPD. Other reactants were also involved, but their presence is not material to the issue before us. Accordingly, Film Tec sued Hydranautics for infringement of claims 1 and 6 of the '344 patent. Hydranautics asserted in defense that under the Contract, the United States, not FilmTec, has legal title to the '344 patent and that FilmTec therefore lacks standing to maintain its infringement suit. The district court held that FilmTec has legal title to the '344 patent because Cadotte invented the claimed membrane after he commenced work at FilmTec, not while he was employed at MRI, and the '344 patent was not invalid and was infringed.[2]

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[2] In an earlier but related case, FilmTec sued Allied-Signal in the same court for infringement of the '344 patent. The district court issued a preliminary injunction against further infringement by Allied-Signal, but we vacated that order on the ground that FilmTec had not shown a likelihood of success on the issue as to whether FilmTec had legal title to the '344 patent. *FilmTec Corp. v. Allied-Signal, Inc.*, 939 F.2d 1568, 19 USPQ2d 1508 (Fed. Cir. 1991) (*FilmTec I*). On remand, the district court determined that FilmTec did have legal title to the '344 patent and reinstated the preliminary injunction. Allied-Signal's appeal from the district court's decision on remand is currently pending before this court in *FilmTec Corp. v. Allied-Signal, Inc.*, Nos. 92-1007 and 92-1023 (*FilmTec II*).

DISCUSSION

Hydranautics argues that Cadotte conceived the claimed invention during the term of the Contract and that, under the Contract, the United States has title to the '344 patent. According to Hydranautics, FilmTec cannot maintain the present suit. This case thus turns on whether the United States or FilmTec is entitled to ownership of the '344 patent. We conclude that the district court erred in deciding that the invention of the '344 patent was made while Cadotte was employed at Film Tec and in failing to correctly apply the provisions of the Contract, the Saline Water Conversion Act, and the FNERDA.

Ownership under the Statute

At the outset we address FilmTec's argument that Hydranautics cannot assert that the United States has title to the '344 patent. FilmTec argues that one cannot raise a third party's equitable claim of title as a defense to patent infringement. As support for its broadly-stated proposition, FilmTec points to *Dorr-Oliver, Inc. v. United States,* 432 F.2d 447, 165 USPQ 517 (Ct. Cl. 1970). In *Dorr-Oliver,* the record title holder of a patent sued the United States for patent infringement under 28 U.S.C. § 1498. The United States asserted as a defense that the plaintiff was not the "owner" of the patent during the period of infringement because plaintiff's employer, AMF, had a superior equitable claim of title pursuant to an employment contract requiring the plaintiff to assign all patents to AMF. The court permitted the United States to assert its title defense, but stated:

> In patent litigation between private parties, equitable rights of ownership of strangers to the suit cannot be raised as defenses against the legal titleholder of a patent.

Id. at 451, 165 USPQ at 517 (citing *Sigma Eng'r Service, Inc. v. Halm Instr. Co.,* 33 F.R.D. 129 (E.D.N.Y. 1963)

(emphasis added). Despite this statement, the court in *Dorr-Oliver* permitted the defendant to raise its title defense. It did so because of the anti-assignment statute which "prohibit[ed] the assignment of any claim for patent infringement against the United States which arose prior to the time a plaintiff acquired title to the patent." *Id.* at 450 n.2 (citing *Brothers v. United States,* 52 Ct. Cl. 462, 466 (1917), *aff'd,* 250 U.S. 88 (1919)).[3] The court considered that, if a third party was the lawful title-holder, then the present plaintiff could not recover from the government. *Dorr-Oliver* in fact supports, rather than undermines, Hydranautics' position in this case since the Court of Claims in *Dorr-Oliver* applied a federal statute to preclude the record title-holder from asserting a patent infringement claim.

In this case, the district court did not address the controlling provisions of the Saline Water Conversion Act, the FNERDA, or the Contract. Section 9(a) of the FNERDA clearly provides that title to any invention made or conceived under a FNERDA contract "shall vest" in the United States. There is no doubt that Cadotte's MRI work was funded by a contract subject to Section 9(a) of the FNERDA. Thus we only need to decide whether the invention of the '344 patent was made or conceived while Cadotte was at MRI, a matter that we will address *infra.*

However, our decision concerning FilmTec's inability to maintain the present suit is also based on the fact that Hydranautics was a third party beneficiary of the Contract. Section 6(d) of the Saline Water Conversion Act, the legislation under which the Contract was let, provides:

> All research within the United States contracted for . . . under authority of this Act, shall be provided for in such manner that all . . . patents . . . resulting from such research developed by Government ex-

[3] The anti-assignment statute was codified at 31 U.S.C. § 203.

> penditure will . . . be *available to the general public* [emphasis added].

85 Stat. at 161. Because, as this statute makes clear, Congress intended that inventions made under the Contract be available to the "general public," of which Hydranautics is a member, it would be contrary to the intent of Congress to permit FilmTec to preclude Hydranautics from practicing such an invention. Hydranautics is clearly a member of the general public to whom inventions made under the Contract must be available.[4] We now consider whether the district court erred in determining that the invention of the '344 patent was not made at MRI.

The Invention

The district court's opinion dealt mostly with questions of infringement. However, it held that Cadotte did not invent the claimed membranes under the Contract because his November experiments, as evidenced by his MRI laboratory notebook, did not "embody the '344 invention." Specifically, the district court concluded that since the November experiments did not result in a membrane with the flux and salt rejection rate limitations of the '344 claims, Cadotte did not invent the '344 membrane during the term of the Contract. The court cited Cadotte's testimony that he did not find the results of his November experiments particularly encouraging, and that he did not even remember those experiments when he reacted TMC and MPD again in February at FilmTec after leaving MRI.

Hydranautics argues that the district court erred as a matter of law by resolving the issue of title to the '344

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[4] The availability of inventions made under the Contract is subject to the authority of the Administrator, pursuant to section 9 of the FNERDA, to waive title to a subject invention or grant an exclusive or partially exclusive license to such an invention; neither has occurred in this case.

patent according to the patent claims rather than according to the terms of the Contract. We agree. As we determined above, under the Contract the government has title to all inventions on in situ condensation polymer membranes conceived or first actually reduced to practice by Cadotte at MRI between July 15, 1976 and January 15, 1978. We conclude that the invention of the '344 patent was conceived while Cadotte was at MRI and that the district court erred in not so holding.

Conception is a legal determination that we review *de novo*. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 USPQ 81, 87 (Fed. Cir. 1986) (citing *Barmag Barmer Maschinenfabrik AG v. Murata Machinery, Ltd.*, 731 F.2d 831, 837, 221 USPQ 561, 565 (Fed. Cir. 1984)). Conception is the "formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice." *Hybritech*, 802 F.2d at 1376, 231 USPQ at 87 (citing 1 *Robinson On Patents* 532 (1890)).

The claimed invention of the '344 patent is a membrane material which is distinguished by the polyfunctional acyl halide (TMC) and polyamine (MPD) components of the polyamide desalinizing layer.[5] Cadotte

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[5] **Claim 1 reads:**

A sheet-like composite material comprising a microporous support layer and, supported thereon, a crosslinked, water permeable, interfacially polymerized, ultrathin polyamide desalinizing layer, said desalinizing layer comprising the interfacial condensation reaction product of the components comprising:

> **(a) an essentially monomeric, aromatic, amine-reactive reactant comprising a polyfunctional acyl halide, the amine-reactive acyl halide groups of said polyfunctional acyl halide being capable of condensing with primary amine functional groups to form amide linkages in less than 60 seconds under normal ambient temperature and pressure; said polyfunctional acyl halide having at least three of said acyl halide groups**

prepared membranes from these reactants in November 1977 at MRI. He tested these membranes for their ability to desalinize seawater by reverse osmosis and

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substituted on an aromatic nucleus comprising less than 3 aromatic rings,; said amine-reactive reactant being at least 0.01 weight percent soluble in liquid aliphatic or liquid halogenated aliphatic solvents; said aromatic nucleus being free of substituents capable of chemical interference with inter-molecular amide-forming condensation reaction;

(b) an essentially monomeric, aromatic, polyamine reactant having at least two primary-amine substituents substituted on an aromatic nucleus comprising less than 3 aromatic rings; the primary amine functionality of said aromatic polyamine reactant being no more than the carboxylic acid equivalent functionality of said polyfunctional acyl halide; said aromatic polyamine reactant having a solubility in water of at least 0.01% by weight and being free of substituents capable of chemical interference with intermolecular amide-forming condensation reactions;

said polyamide layer having a lower percent elongation than the corresponding linear polymer; a molecular weight in excess of 100,000; a crosslink density of at least 1 per 100,000; a solubility in liquid organic amide, sulfoxide, and pyrrolidone solvents or solvent blends which is less than 10% by weight; a salt rejection capability, tested with simulated sea water under 40 to 70 atmospheres pressure and 25° C, of at least 85% at a flux of at least about 400 l/m^2d;

said polyamide layer including a plurality of sites having the formula $Ar(CONH-)_2COOH$, wherein Ar represents the aromatic nucleus residue of the polyfunctional acyl halide.

Claim 6 reads:

A sheet-like composite material comprising a microporous support layer, and, polymerized in situ thereon, a crosslinked, water permeable, interfacially polymerized polyamide desalinizing membrane comprising the interfacial condensation product of the components consisting essentially of:

$Ar(COX)_2$

wherein Ar represents a carbocyclic, monocyclic aromatic nucleus free of any amide-forming groups other than the COX group, and X represents halogen of atomic weight less than 130; up to about

found that they exhibited fluxes of 12.7 gfd and 9.5 gfd with salt rejections of 95.0 and 88.5%, respectively.[6]

FilmTec argues that Cadotte's November 1977 membranes did not constitute conception of the claimed membranes because their flux and salt rejection were below the limits stated in the claims and below that required for commercial use. However, those facts will not defeat a finding that Cadotte conceived the '344 invention within the meaning of the Contract. The claimed invention is a composition, claimed by its structure, the key limitations of the claims being the chemical reactants, and Cadotte conceived that invention while at MRI.[7] Cadotte made the membranes with the stated reactants, and the results sufficed to show that Cadotte's invention went beyond the minimum requirements of operability; they actually worked to desalinize seawater. Since commercial success is not required for a reduction to practice, it certainly is

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50% by weight of said $Ar(COX)_3$ being replaceable with the compound $AR(COX)_2$, wherein AR and X are as defined previously;

$Ar'(NH2)_2$,

wherein AR' represents a carbocyclic, monocyclic aromatic nucleus free of any acyl halide-reactive groups other than primary amine substituents;

said interfacial reaction product having a crosslink density in excess of one per 100,000 polymer molecular weight, being substantially insoluble in organic liquid amide, sulfoxide, and pyrrolidone solvents and solvent blends, and having a salt rejection capability, tested with simulated seawater under 40 to 70 atmospheres pressure and 25° C, of at least about 95 to 600 l/m²d flux.

[6] Fluxes in this case have been stated both in gfd and l/m²d. 1 gfd = 40.8 l/m²d, so that the fluxes recited in claims 1 and 6 are equivalent to 9.8 and 14.7 gfd, respectively. Converted to the applied pressure specified in claims 1 and 6 (70 atm.), according to the record, the fluxes Cadotte obtained correspond to 7.2 gfd or 293.8 l/m²d and 5.4 gfd or 220.3 l/m²d.

[7] Whether Cadotte reduced this invention to practice we need not decide in view of our disposition of the case.

not required for a conception. *See DSL Dynamic Sciences, Ltd. v. Union Switch & Signal, Inc.*, 928 F.2d 1122, 1126, 18 USPQ2d 1152, 1155 (Fed. Cir. 1991) (citing *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 861, 226 USPQ 402, 407 (Fed. Cir. 1985), *cert. denied*, 475 U.S. 1016 (1986).

The fact that the materials may not have met the performance recitations of the claims is also not conclusive. The membranes were surely within the structural scope of the claims. The key distinction between the invention of the '344 patent and the prior art is the presence of TMC, which has three acyl groups in the acid chloride component of the reaction as opposed to two such groups in the prior art. Cadotte relied on the distinction between di- and polyfunctional acyl halides in the prosecution of his patent application, arguing that a triacyl halide has superior crosslinking ability due to its extra crosslinking. At trial, Cadotte underscored the importance of TMC by testifying that his discovery of its ability to produce crosslinking, sidebranching, and a "super" molecular structure was an important contribution to his discovery of the reaction. Cadotte stated:

> There are many, many, many amines available, likewise, many, many acid chlorides. And over that long time, I know I had done hundreds, maybe thousands, of different combinations of acid chloride reactions and polyamine reactions. So it turns out this reaction is actually very unique. . . . I have been using both [TMC and MPD] for some time . . . and there was nothing in there that suggested to me that if I brought these two reagents together, that they'd form [the] extremely superior membrane that actually resulted.

It is clear that the invention conceived in November 1977 at MRI is the invention claimed in the '344 patent. The claims cover a large number of materials, no doubt having varied performance characteristics. Cadotte may

well have refined the invention when he went to FilmTec, and he may have then found the best conditions for making his compositions. The record is clear, however, that his work in February 1978 was on the same invention that he conceived in November 1977. Were we to find that inclusion of narrow performance limitations in the claims could serve to expel the claimed invention from operation of the Contract under which the invention was made, we would be defeating the intentions of the parties to the Contract, who agreed that inventions made thereunder belong to the United States.[8]

The district court noted that Cadotte did not find the results of his November work "particularly encouraging," that in February he did not remember the November experiments, and that he was a credible witness. The court speculated that Cadotte might not have remembered what led him to the February experiments and that he did not keep the invention to himself so he could take it with him to FilmTec.

We will not invade the province of the district court to judge matters of credibility, difficult as it is for us to understand how February experiments on the same compositions were not a direct sequel to experiments three months earlier. What we do conclude, however, is that in November 1977, Cadotte conceived reverse osmosis membranes made from the interfacial reaction of TMC and MPD and showed that they performed their "intended function beyond a probability of failure." This is the subject matter of both the Contract and the invention of the '344 patent, notwithstanding the difference in performance limitations between language of the patent claims and the products of the November experiments. Cadotte therefore conceived the '344 invention under the

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[8] It should be recognized that, in making our analysis of the claim limitations in this case, we are neither conducting an infringement analysis nor determining priority in an interference. We are interpreting a statute and contract in light of their clear provisions.

Contract. The United States, by virtue of the Saline Water Conversion Act and the FNERDA, is entitled to ownership of the invention.

FilmTec argues that Cadotte was not bound by the Contract, and that Cadotte, as the inventor of the claimed invention, had title to the '344 patent. This is not the point since the provisions of the legislation governing the Contract control. Under the FNERDA, title to inventions made by an employee hired to perform that research automatically vested in the United States. The Contract required MRI to include a provision in its employment contracts with employees hired to do research under it that the government would retain title to all inventions conceived or reduced to practice during its term. Cadotte conceded that it did so and that he used government support and MRI's facilities in conducting his research. Thus, when the invention was conceived by Cadotte, title to that invention immediately vested in the United States by operation of law. He had no right to assign it to FilmTec; the statute had divested him of all of his interest. Although the formalities of the statute, including issuance to the United States, were not complied with, that omission does not change the effect of the law. As noted earlier, the Administrator could have waived title to the invention, or granted an exclusive or partially exclusive license to any party, including MRI, FilmTec, or Hydranautics. However, the Administrator has not done so. The result, therefore, is that title remained vested in the United States. In light of our disposition of this case, we need not review the district court's holding that Hydranautics infringed the '344 patent.[9]

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[9] Hydranautics also argues that even if Cadotte conceived the '344 membrane in February, and not in November, it is within the scope of the three-month holdover provision of the Contract. This provision requires MRI to submit to the government

> written information concerning the conception or actual reduction to practice . . . of every invention made by [MRI] per-

CONCLUSION

Because we conclude that Cadotte conceived the claimed invention in November 1977, within the term of the Contract, and under the terms of the governing legislation title vested in the United States, FilmTec cannot maintain this suit for patent infringement.

COSTS

Costs to Hydranautics.

REVERSED

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taining to the work called for in this contract which was conceived or first actually reduced to practice within . . . three (3) months subsequent to the term of this contract.

Cadotte left MRI on December 31, 1977 and the MRI contract officially terminated on January 15, 1978. According to Hydranautics, the three month holdover period extended until March 31, 1978, at the earliest, and perhaps until April 15, 1978. Hydranautics argues that, regardless when the holdover period ended, February 23, 1978 is squarely within that period. However, because we conclude that Cadotte conceived the '344 membrane in November of 1977 during the term of the Contract, we do not address Hydranautics' alternative argument.

APPENDIX B

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA

Case No. 90-563 GT (M)

FILMTEC CORPORATION,

Plaintiff,

v.

HYDRANAUTICS,

Defendant,

FINDINGS OF FACT AND CONCLUSIONS OF LAW

JUDGMENT

[Filed August 30, 1991]

This is an action for patent infringement of United States Patent No. 4,277,344 (the '344 patent). Plaintiff FilmTec Corporation sought a preliminary injunction against defendant Hydranautics corporation, and a hearing was held in that matter on July 23, 1990. On the record before the court at that time, the court denied the motion for the preliminary injunction. The court set the case for trial in May, 1991. At the conclusion of the trial, the court took the matter under submission, in order to carefully review the voluminous record, including a lengthy transcript of the trial and hundreds of trial exhibits. Having completed its review of the record, the court rules as follows:

Plaintiff FilmTec is a Delaware corporation having its principal place of business in Minneapolis, Minnesota, and is a wholly owned subsidiary of The Dow Chemical

Company. Defendant Hydranautics is a California corporation having its principal place of business in San Diego, California and is a wholly owned subsidiary of Nitto Denko Corporation, a Japanese corporation.

The patent in suit is for an interfacially polymerized reverse osmosis membrane, embodied in FilmTec's commercial FT-30 membrane. The court finds that the patented invention was a very significant advance in reverse osmosis membrane technology, and is entitled to a broad range of equivalents. Expert testimony established that the patent has remained state of the art since it was granted in 1981.

The FT-30 is capable of desalinizing saltwater, a technology having great utility for industrial and residential uses around the world. It is formed out of the interfacial reaction of trimesoyl chloride ("TMC") and metaphenylene diamine ("MPD"). The membrane is notable for its high flux (ability to pass water) and high salt rejection. FilmTec has built its business around sales of the FT-30.

FilmTec charges Hydranautics with patent infringement of Claims 1 and 6 of the '344 patent through its manufacture of two membranes: the CPA-2 and HPM. The HPM as formed out of the interfacial reaction of TMC, isophthaloyl chloride ("IPC") and MPD, along with the addition of diaminobenzoic acid (DABA) to the solution. The CPA-2 is also the product of TMC, IPC and MPD, but includes the addition of the camphorsulfonic acid salt of triethylamine ("TEACSA"). The HPM is no longer manufactured. The CPA-2 is a commercially viable and competitive product with high flux and high salt rejection.

Literal Infringement

The court's first inquiry is as to the charge of literal infringement of Claims 1 and 6. Determination of literal infringement is a two step process. First, the court must

determine the scope of the claim, a question of law. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1054 (Fed. Cir.1988), *cert. denied*, 488 U.S. 825 (1988). The second step requires a determination of whether the claims, as properly construed, are met by the accused device. *Id.* The party asserting literal infringement has the burden of proving by a preponderance of the evidence that each limitation of a claim is found in the accused device. *Id.*

To determine the scope of a claim, the court is to look to the language of the claim itself, and "give the terms of the claim their ordinary meaning, unless it appears that the inventor used them differently." *ZMI Corp v. Cardiac Resuscitator Corp.*, 844 F.2d 1576, 1579 (Fed. Cir. 1988). While the court may look to the specification of the patent to interpret a claim, it is not to read extraneous limitations into the claim. *See E.I. du Pont de Nemours & Co. v. Phillips Petro.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988), *cert. denied*, 488 U.S. 986 (1988).

Claim 1

Claim 1 of the patent reads:

> 1. A sheet-like composite material comprising a microporous support layer and, supported thereon, a crosslinked, water permeable, interfacially polymerized, ultrathin polyamide desalinizing layer, said desalinizing layer comprising the interfacial condensation reaction product of the components comprising:
>
> (a) an essentially monomeric, aromatic, amine-reactive reactant comprising a polyfunctional acyl halide, the amine-reactive acyl halide groups of said polyfunctional acyl halide being capable of condensing with primary amine functional groups to form amide linkages in less than 60 seconds under normal ambient temperature and pressure; said polyfunc-

tional acyl halide having at least three of said acyl halide groups substituted on an aromatic nucleus comprising less than 3 aromatic rings; said amine-reactive reactant being at least 0.01 weight percent soluble in liquid aliphatic or liquid halogenated aliphatic solvents; said aromatic nucleus being free of substituents capable of chemical interference with intermolecular amide-forming condensation reactions;

(b) an essentially monomeric, aromatic, polyamine reactant having at least two primary-amine substituents substituted on an aromatic nucleus comprising less than 3 aromatic rings; the primary amine functionality of said aromatic polyamine reactant being no more than the carboxylic acid equivalent functionality of said polyfunctional acyl halide; said aromatic polyamine reactant having a solubility in water of at least 0.01% by weight and being free of substituents capable of chemical interference with intermolecular amide-forming condensation reactions; said polyamide layer having a lower percent elongation than the corresponding linear polymer; a molecular weight in excess of 100,000; a crosslink density of at least 1 per 100,000; a solubility in liquid organic amide, sulfoxide, and pyrrolidone solvents or solvent blends which is less than 10% by weight; a salt rejection capability, tested with simulated sea water under 40 to 70 atmospheres pressure and 25 degrees C., of at least 85% at a flux of at least about 400 1/m2d; said polyamide layer including a plurality of sites having the formula Ar(CONH-)2 COOH, wherein Ar represents the aromatic nucleus residue of the polyfunctional acyl halide.

The dispute over literal infringement in this case turns entirely upon the court's determination of the scope of Claim 1. Both the FT-30, the HPM and the CPA-2 are formed by the interfacial reaction of TMC and MPD. Hydranautics contends that CPA-2 does not infringe

Claim 1 because the CPA-2 is manufactured by adding a third reactant, IPC, a difunctional acid chloride, to the organic solution replacing more than 50% of the TMC, and because the CPA-2 is dried in an oven at a high temperature. The HPM was also manufactured by adding the IPC to the organic solution replacing more than 50% of the TMC.

The court concludes that there are no limitations in Claim 1 as to the amount of IPC, or any other difunctional acid chloride, which may be added to the basic reactants described in Claim 1. It is well settled that the word "comprising" is a term of art in patent law which establishes that a claim is open-ended, *i.e.* the presence of other elements or chemicals are permitted and the claim may nevertheless be infringed. The HPM and CPA-2 are membranes in which the desalinizing layer is formed by the interfacial condensation reaction of the components described in Claim 1 sections (a) and (b).

Hydranautics urges the court to read into Claim 1 a limitation found in Claim 6, which reads "up to about 50% by weight of said Ar(COX)3 being replaceable with the compound Ar(COX)2." This section refers replacing a portion of a chemical such as TMC with a chemical such as IPC. Hydranautics use 60% IPC and 40% TMC in the CPA-2.

The court will not read this limitation into Claim 1. First, there is no need to interpret what the inventor, John Cadotte, meant by the language of Claim 1. The chemicals are clearly defined and there is no contention that someone skilled in the art would not know what family of chemicals were referred to in Claim 1. Further, while the specifications do explain that "up to about 50% by weight of the amine-reactive component can comprise a dicarboxylic acid halide" (Col. 9, 1. 40), this section is the beginning of a description of the "preferred methods" for forming the membrane. (Col. 9, 1. 33). Claim 1 is not directed to any particular method or em-

bodiment of the invention, but is rather claiming the basic chemistry that makes this invention unique.

Lastly, such a limitation should not be read into the more general Claim 1, as it is contained explicitly in Claim 6. "Where . . . the limitation sought to be 'read into' a claim already appears in another claim, the rule is far more than 'general'. It is fixed. It is long and well established. It enjoys an immutable and universally applicable status comparatively rare among rules of law." *D.M.I. v. Deere & Co.*, 755 F.2d 1570, 1574 (Fed. Cir. 1985). Hydranautics urges the court to distinguish DMI by finding that in this case the specifications require the court to find that the "up to about 50%" limitation was meant to be included in the claim. The court is not persuaded by this argument. Had Cadotte intended that limitation to be in Claim 1, he could have included it. Claim 1 literally allows up to any amount of any other chemical as long as the limitations of the claim are met.

Hydranautics also argues that the CPA-2 is outside of Claim 1 because it is manufactured with a heat cure, whereas Claim 1 includes no heat cure. It relies heavily upon Mr. Cadotte's own testimony at trial. When asked whether two experiments that he conducted in November, 1977 and February 1978 were examples of the invention embodied in the '344 patent, Cadotte responded that they were not part of his invention, as there is no heat cure step required in the '344 patent (although Claim 10 does include a drying step). The court considered Mr. Cadotte to be an able and extremely credible witness. He stated that he does not consider a membrane which requires a heat cure to be his invention, but his testimony should not be taken farther than it goes. He is not qualified to testify as to the legal issue of the scope of Claim 1 for the purposes of literal infringement. Claim 1 describes the combination of the essential chemicals, to produce a membrane meeting the claim limitations. The addition of a drying step does not take the CPA-2 out of the scope

of Claim 1. To find non-infringement because of the drying step would be to read a process step into the product claim. Further, modifications by mere addition of elements of functions, whenever made, can not negate infringement. *See Amstar Corp. v. Envirotech Corp* 730 F.2d 1476. 1482 (Fed. Cir. 1984).

The court understands Hydranautics' argument to be that the heat step fundamentally changes the invention, and creates a different kind of membrane. This argument and Hydranautics factual basis for this claim will be addressed below when the court considers non-infringement under the reverse doctrine of equivalents.

Claim 6:

Claim 6 reads:

> A sheet-like composite material comprising a microporous support layer, and, polymerized in situ thereon, a crosslinked, water permeable, interfacially polymerized polyamide desalinizing membrane comprising the interfacial condensation product of the components consisting essentially of: Ar(COX)3 wherein Ar represents a carbocyclic, moncyclic aromatic nucleus free of any amide-forming groups other than the COX group, and X represents halogen of atomic weight less than 130, up to about 50% by weight of said Ar(COX)3 being replaceable with the compound Ar(COX)2 wherein Ar and X are as defined previously; Ar'(NH2)2, wherein Ar' represents a carbocyclic, monocyclic aromatic nucleus free of any acyl halide-reactive groups other than the primary amine substituents; said interfacial reaction product having a crosslink density in excess of one per 100,000 polymer molecular weight, being substantially insoluble in organic liquid amide, sulfoxide, and pyrrolidone solvents and solvent blends, and having a salt rejection capability, tested with simulated seawater under 40 to 70 atmospheres pres-

sure and 25 degrees C., of at least about 95 at 600 l/m2d flux.

There is no dispute that this claim allows the addition of IPC to the TMC/MPD mixture, as it too refers to a membrane "comprised" of certain chemicals. Further, the court concludes that like Claim 1, this claim does not exclude from its scope membranes which are heat cured. The critical issue in interpreting the scope of this claim is the language "up to about 50%".

The court begins its analysis by looking to the plain language of this part of the claim. In plain English usage "about" is a word which indicates in this context something near or close to. (Random House Dictionary of the English Language.) At least one court has found that as a matter of law, the term "about" is a "clear warning that exactitude is not claimed but rather a contemplated variation." *Syntex Inc. v. Paragon Optical, Inc.* 7 USPQ2d 1001, 1038 (D.Ariz. 1987). In facing a similar problem, another district court has looked to the function of the claimed chemicals as they operated at the claimed percentages, and then compared the function of chemicals at amounts higher than those percentages. *Kolene Corporation v. Motor City Metal Treating, Inc.* 307 F. Supp. 1251 (E.D. Michigan, 1969), aff'd 400 F.2d 77 (6th Cir. 1971). This court will take a similar, but not identical approach.

The specifications indicate that above about 50% of IPC in an IPC/TMC mixture, essential properties of the membrane, particularly cross-linking, would be lost and the membrane would not meet the limitations of the claims. ('344 patent, Col. 9, l. 39-55). Cadotte found no particular advantage to the use of the diacyl halide, and taught that they should not be used in the context of this invention except in combination with acyl halides having a functionality greater than 2, e.g. trimesoyl chloride. (Col. 14 l. 48 - 58). But Claim 6 specifically claims the addition of the diacyl halide, and the specifications

contemplate the admixture of IPC and TMC within the scope of the invention. (Col. 13, l. 1).

The court reviewed the test evidence to determine whether a 60/40 membrane performs within the limitations of Claim 6. This limitation reads "having a salt rejection capability, tested with simulated seawater under 60 to 70 atmospheres pressure and 25 degrees C. of at least about 95 at 600 l/m2d flux." The court reviewed the following test results carefully: plaintiff's exhibits 38, 49, 62, 63, 64, 83, and defendant's exhibits DZ. These exhibits represent testing conducted by both Hydranautics and FilmTec, at pressures within the limitations of the patent, in which membranes were manufactured from a 60/40 mixture under a variety of conditions, including variations in both the PH and the solvents.

The court acknowledges its lack of scientific expertise. But even as a novice the court could see the extent to which the design of an experiment determines the experimental results. While the parties bickered extensively over the veracity and relevance of each other's results, the court can reach at least this finding from reviewing the above test results, including the much discussed Patent Matrix III studies. The 60/40 mixture more often than not performed within the above noted limitations of Claim 6.

Hydranautics noted at trial that the 60/40 mixture without TEACSA performed much better when created with water that had an "adjusted" pH of 5.7. But the 60/40 mixture also met the limitations of the claim when produced at the so-called "natural pH" of about 8.5. Besides, the court finds that the pH adjustment is an interesting but irrelevant observation made by Hydranautics. Neither Claims 1 nor 6 specifies any particular pH for the feed water, and pH adjustment is an elementary and basic practice in chemistry.

There was also extensive testimony and testing as to the performance of the 60/40 mixture with TEACSA,

and all other mixtures without TEACSA. These tests will be discussed in more detail below, but the court notes that the relevant question for purposes of determining whether a 60/40 mixture without TEACSA infringes Claim 6 is whether that mixture produces a membrane within the performance limitations of Claim 6.

Since the court finds that the test evidence establishes that 60/40 without TEACSA does produce a membrane which performs within the claim limitations, by law the "about up to 50%" language of Claim 6 includes the 60/40 mixture.

The court finds that plaintiff has met its burden of showing by a preponderance of the evidence that the HPM and CPA-2 infringe Claims 1 and 6 of the '344 patent.

Doctrine of Equivalents

Plaintiff has met its initial burden by proving literal infringement. When a patentee establishes literal infringement, the accused infringer may undertake the burden of going forward to establish the fact of non-infringement under the reverse doctrine of equivalents. *SRI Intern. v. Matsushita Elec. Corp. of America* 775 F.2d 1107, 1124. (Fed. Cir. 1985). If Hydranautics makes a *prima facie* case, FilmTec must rebut that *prima facie* case, as they retain the burden of persuasion on the issue of infringement. *Id.* at 1124.

The reverse doctrine of equivalents raises a fact question as to "whether a product has been so far changed in principle that it performs the same or similar function in a substantially different way." *Id. at 1124.* Hydranautics argues that the addition of the TEACSA and the use of a heat cure for the CPA-2 produces a membrane which de-salinises water in a substantially different way from the invention of the '344 patent.

The court has carefully reviewed the evidence presented by Hydranautics, and finds that while Hydranautics may

make a *prima facie* case, in the end FilmTec succeeded in showing that the TEACSA does not change the manner in which the membrane desalinizes water.

No witness seemed quite sure just what the addition of TEACSA does to the chemistry of the CPA-2 membrane, but this ambiguity cannot lead to a finding of non-infringement. Defendant's and Plaintiff's witnesses agreed that TEACSA is not a reactant in the formation of the membrane, so it does not fundamentally change the chemistry of the MDP/TMC/IPC reaction. But the TEACSA has some effect: the 60/40 mixture with TEACSA does perform better than the 60/40 mixture without TEACSA.

Hydranautics tried to develop two theories which would account for this better performance with TEACSA: that the TEACSA increased the free carboxyl groups which in turn affect amine transport across the face of the membrane, and that the surface morphology of the membrane was different and that this affected the membrane performance.

There was only one witness who testified as to the affect of TEACSA on amine transport, Dr. Albright. Dr. Albright is unquestionably an expert in polymer science, but had limited experience in the manufacture and analysis of interfacially polymerized reverse osmosis membranes. He testified that the existence of more free carboxyl groups on the membrane would enhance water transport over salt transport. He based this opinion upon a theory which he claimed had been around "longer than he or [Dr. Petersen]", and upon an experiment performed by Hydranautics. (Defendant's BX).

Plaintiff successfully discredited the Hydranautics experiment, which by Hydranautics own admission produced unreliable data at certain of the test levels. As to Dr. Albright's opinion, there is no factual basis in the record to support that opinion outside of the Hydranautics experiment. Further, this was a view of the function of the TEACSA which was not even supported by the inventor of the CPA-2, Mr. Tomaschke.

As to the claim of difference in surface morphology, the evidence presented by Hydranautics was opened to significant dispute both based upon the circumstances of the Hydranautics testing and the opinion of FilmTec's experts. Hydranautics compared the surface of a CPA-2 membrane with the surface of the FT-30, and compared other laboratory membranes produced with and without TEACSA. But the FT-30 sample from which Hydranautics obtained its test samples was past its warranty, and may have been used. Testimony established that age and handling would affect the surface of the membrane. And there was conflicting expert testimony as to which slides most accurately represented the surface of the FT-30. Moreover, plaintiff's tests showed that even if there was a difference in the surface morphology of the FT-30 and the CPA-2, that after washing the membranes with water for 4-5 days these differences disappeared.

Hydranautics also examined other membrane manufactured in the laboratory, particularly comparing 60/40 systems with and without TEACSA. FilmTec's testing also showed differences in the surface morphology of membranes with and without TEACSA. But in the end, this evidence cannot establish that the TEACSA changes the way in which the membrane performs. FilmTec's expert testified that as far as he knew there was no link between surface morphology and performance, and this testimony was unrebutted.

FilmTec argued that the TEACSA acted as a pore preservative or humectant, which allowed the membrane to be dried at higher temperatures and still perform. The testimony established that the use of salts such as TEACSA as a humectant is well known, but Hydranautics evidence did establish that at higher temperatures the effect of TEACSA on flux disappeared. But if the evidence did not establish that TEACSA's sole role is as a humectant, neither could it establish any other theory which would show non-infringement by virtue of performing in a different way.

Obviousness Type Double Patenting

The Federal Circuit addressed the doctrine of obviousness-type double patenting in *In re Longi* 759 F.2d 887, 892-3 (Fed. Cir. 1985):

> . . . a rejection based upon double patenting of the obviousness type . . . is a judicially created doctrine grounded in public policy (a policy reflected in the patent statute) rather than based purely on the precise terms of the statute. The purpose of this rejection is to prevent the extension of the term of a patent, even where an express statutory basis for the rejection is missing, by prohibiting the issuance of the claims in a second patent not patentably distinct from the claims of the first patent . . . [W]e must direct our inquiry to whether the claimed invention in the application for the second patent would have been obvious from the subject matter of the claims in the first patent, in light of the prior art.

Hydranautics has the burden of proving obviousness type double patenting by clear and convincing evidence. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1375 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

Hydranautics bases its claim upon the testimony of Dr. Albright. He testified that the '344 patent was obvious in light of Cadotte's '183 patent and a prior art article by Endoh. The '183 discloses the invention of an interfacially polymerized reverse osmosis membrane using TMC, and Endoh disclosed the use of MPD in an asymmetric, cast membrane.

The court finds that Dr. Albright's testimony and the prior art he relies upon does not establish invalidity for obviousness type double patenting. The application for the '344 patent was amended to refer to the co-pending '183 patent. A patent by Kurihara which contained the teachings of Endoh was also disclosed to the patent offi-

cer. Although FilmTec could not definitely establish at trial that the examiner reviewed the application for the '183 patent, "a mere failure to cite certain prior art does not necessarily mean it was not considered by the examiner, who may have considered it unworthy of citation. *Solder Removal Co. v. ITC*, 582 F.2d 628, 633 n.9 (CCPA 1978).

Moreover, Dr. Albright's testimony appears to the court to be hindsight reasoning. There are no teachings in either the '183 patent or the Endoh reference which would suggest that the art discussed in each should be somehow combined. "Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination." *In re Geiger* 815 F.2d 686, 688 (Fed. Cir. 1987). "When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself." *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, at 1051.

The court is further persuaded by the nature of the testimony on this issue. No experts with extensive experience in researching and creating reverse osmosis membranes testified that this invention was obvious over the prior art. On the contrary, the testimony reenforced the path-breaking nature of the invention, and the regret of at least one expert that he himself had not himself found the combination of chemicals discovered by Dr. Cadotte.

The secondary considerations in evaluating a claim of obviousness type double patenting include the commercial success of the product. *Fromson v. Advance Offset Plate, Inc.*, 755 F.2d 1549, 1557 (Fed. Cir. 1985). The FT-30 has enjoyed tremendous commercial success, and few products have rivaled its effectiveness in desalinizing seawater.

Willfulness of the Infringement

FilmTec charges Hydranautics with willful infringement by making, using and selling the CPA-2 and HPM membranes with notice and without a reasoned basis for believing the membranes did not infringe. The standard for willful infringement is "whether, under all the circumstances, a reasonable person would prudently conduct himself with any confidence that a court might hold the patent invalid or not infringed." *State Industries, Inc. v. Mor-Flo Industries, Inc.* 883 F.2d 1573, 1581 (Fed. Cir. 1989), *cert. den.* 110 S. Ct. 725 (1990). There is no question that Hydranautics had notice of the patent before it manufactured and sold the HPM and CPA-2. The evidence establishes that Hydranautics was not only aware of the '344 patent, but concerned about its possible infringement of the patent.

Hydranautics was under an affirmative duty of due care to avoid infringement. *Studiengesellschaft Kohle, M.B.H. v. Dart Industries* 862 F.2d 1564, 1579 (Fed. Cir. 1988). While obtaining advice of counsel is not required, seeking advice of competent counsel may show due care. *See Underwater Devices Inc. v. Morrison-Knudsen Co.*, 717 F.2d 1380, 1389-90 (Fed. Cir. 1983).

Factors to be considered in evaluating an opinion are "whether it is competent, authoritative, and contains sufficient internal indicia of reliability to justify the infringer's belief that the opinion is competent." *Studiengesellschaft Kohle M.B.H. v. Dart Industries, Inc.* 666 F. Supp. 674, 690 (D. Del. 1987), *aff'd* 862 F.2d 1564.

The legal opinions relevant to the development and limited sales of the HPM are opinions of Louis Kline, in house counsel for Rohm & Haas, and the May 1988 draft opinion of Mr. Osha. Mr. Kline's draft "preliminary" opinion would not support a good faith belief that the patent was not infringed. It raises more questions than it answers and reaches no conclusions as to non-infringement of the HPM of the '344 patent.

Mr. Kline also gave an oral opinion at a meeting with scientists and managers at Hydranautics. He cannot recall what he said at the meeting. Dr. Maupin, a former employee of Hydranautics, testified as to his recollection of the meeting, but the court finds his testimony to be inconclusive. There is no indication that any conclusion from that meeting could have been reasonably relied upon by Hydranautics.

In his May draft opinion, Mr. Osha informed Hydranautics that the HPM membrane probably would infringe the '344 patent under the doctrine of equivalents. Hydranautics at this point had in Mr. Osha's opinion a very competent, authoritative and carefully considered conclusion of infringement. A reasonable person would not prudently conclude after reading that opinion that a court might hold that the HPM did not infringe the FT-30 membrane. Hydranautics presented no other evidence which could support a belief that the HPM did not infringe.

Hydranautics protests that its sales of the HPM were only of an experimental product, and that it abandoned the HPM before any large sale manufacturing or sale. But depending upon the time period, Hydranautics either had an opinion that it was infringing the patent, or had essentially no opinion but only discussions with Mr. Kline which were inconclusive as to infringement. In either circumstance, Hydranautics was not free to infringe the patent, even if to test its HPM membrane in the field. When such testing involved filling orders from a contract, Hydranautics entered into a marketplace which it knew was reserved for sales of the '344 patented invention. The court therefore concludes that sales and production of the HPM constituted willful infringement.

The more difficult question before the court is whether Hydranautics willfully infringed the patent when it entered into production and sales of the CPA-2 after Mr. Osha's December 1988 opinion. The court found Mr.

Osha's testimony to be completely credible, and does not question his integrity or competence as patent counsel. While FilmTec may disagree with his conclusions as to the significance of the Patent Matrix III test results, and disagree with the form of his opinion, the court finds the opinion to be more than competent. Mr. Osha concluded, as a result of the Patent Matrix III data, that the CPA-2 did not infringe under the doctrine of equivalents.

FilmTec charges that the Patent Matrix III tests were biased, as they were conducted at a pH which Hydranautics knew was less than optimal for the 60/40 membrane without TEACSA. Mr. Osha stated during his testimony that he did not request that tests be run at the "optimal" pH, as he found the reasoning of Hydranautics compelling: the patent does not teach any particular pH. The court in this decision has disagreed with Mr. Osha's conclusion. But an erroneous belief on the part of Hydranautics or Mr. Osha does not necessarily constitute bad faith or willful infringement.

The testimony and documentary evidence indicate that Mr. Osha was not given all of the test results on the 60/40 system available at that time. The most relevant results which were not provided to Mr. Osha before he wrote his final opinion are the so-called PIFA optimization tests. (Plaintiff's exhibit 62). These tests produced 60/40 membranes within the claim limitations. All except one were run at an adjusted pH. When questioned about these results, Hydranautics scientists explained that they did not consider them important because they were run at the adjusted pH, and because they ran many tests which produced unacceptable results.

While the court finds the adjusted pH figures to be relevant, the position of Mr. Osha and the scientists at Hydranautics as to the adjusted pH tests was not unreasonable. It was also not unreasonable for Mr. Osha and the scientists to conclude that the tests evidenced a surprising and unexpected effect of TEACSA on the membrane. It cannot be said that Hydranautics conducted

itself without "any confidence" that the patent would be held to be not infringed. *State Industries* at 1581.

Title

Hydranautics asserts that FilmTec lacks title to the '344 patent, claiming that Cadotte invented the MPD/TMC membrane while employed at North Star (MRI) under government contract. The court has visited this issue once before, in *FilmTec Corporation v. Allied-Signal, Inc. and UOP Inc.*, Civil Case No. 89-0919 GT (IEG). In its recent order in that case, the court found on remand that Mr. Cadotte did not invent the claimed invention while employed at North Star. The court reached that conclusion in part based upon the evidence in the record of this case.

Cadotte's North Star laboratory notebooks of November 1977 reveal that Mr. Cadotte did combine MPD and TMC to create a membrane in November of 1977, and ran seawater tests on the subject laboratory membranes at 1500 psi. Cadotte testified that he did not find the result particularly encouraging. The flux and rejection rates are not within the limitations of Claims 1 or 6 when they are evaluated in light of the high pressure, a pressure above the upward limit of the patent claims.

Hydranautics argues that Cadotte knew he had stumbled on to something, and offers by inference his tests in February, 1978 which duplicated in part the November experiments. These February experiments were cited by Cadotte in his initial "Disclosure of Invention" at Filmtec, the disclosure which embodied the '344 membrane. Cadotte claims that in February he did not remember the November experiments. The court finds him a very credible witness, and it could be that he did not remember or at any rate does not now remember just what led him to the February experiments.

But in any case the November experiments are exactly that—experiments. Hydranautics offers no basis for its conclusion that they embody the '344 invention, other

than the similarity to the February experiments. But the February experiments were not identical to the November experiments: they had encouraging flux and rejection rates at a desirable pressure, and they were dried at a different temperature. Cadotte continued to experiment with the drying temperature until he reached the optimal conditions for creating the membrane.

By implication Hydranautics argues that Cadotte kept the invention to himself so that he could take it with him to FilmTec. But his testimony and demeanor leads the court to conclude that there was no such subterfuge. Cadotte invested a relatively small amount in FilmTec, certainly not an amount one would invest if he knew he was bringing with him a pathbreaking discovery.

Conclusion

Based on the foregoing discussion, and the findings of fact and conclusions of law contained therein, the court holds:

1. The '344 patent is valid

2. FilmTec holds legal title to the '344 patent

3. Hydranautics' HPM membrane literally infringed claims 1 and 6 of the '344 patent

4. Hydranautics' CPA-2 membrane literally infringes claims 1 and 6 of the '344 patent

5. The infringement for the HPM was willful

6. The infringement for the CPA-2 was not willful

7. FilmTec is entitled to a permanent injunction against further infringement.

IT IS SO ORDERED.

Dated: 8-30-91

/s/ Gordon Thompson, Jr.
GORDON THOMPSON, JR.
United States District Judge

APPENDIX C

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA

Case No. 90-0563 GT (M)

FILMTEC CORPORATION,
Plaintiff,
v.
HYDRANAUTICS,
Defendant.

MEMORANDUM DECISION AND ORDER

[Filed Sept. 7, 1990]

Plaintiff's application for a preliminary injunction came on for hearing July 23, 1990 at 10:30 a.m. John R. Wertz of Sullivan Cummins Wertz McDade Roberts & Wallace, Douglas E. Whitney of Morris, Nichols, Arsht & Tunnel, and Philip D. Shepard and Bernd W. Sandt of The Dow Chemical Company appeared on behalf of the Plaintiff. J. Frank Osha of Sughrue, Mion, Zinn, Mac-Peak & Seas appeared on behalf of Defendant. Having reviewed the pleadings, exhibits, declarations, and arguments in favor and in opposition to the application, the court hereby denies the request for a preliminary injunction.

BACKGROUND

The patent in suit is for a reverse osmosis membrane, the FT-30. The patent, U.S. Patent No. 4,277,344 (" '344"), was issued on July 27, 1981 to John F.

Cadotte. Cadotte assigned his rights in the patent to FilmTec. This court is very familiar with this patent and the FT-30, as it has previously heard applications for preliminary injunctions involving this patent in *FilmTec Corporation v. Allied-Signal, Inc. et al.*, Civ. No. 89-0919-GT (M) (IEG) and in *Allied-Signal, Inc. et al. v. FilmTec Corporation,* Civ. No. 89-0862-GT (M).

The FT-30 membrane separates solid particles out of aqueous solutions. It can desalinize salty or brackish water. The most important commercial characteristics of the FT-30 for the purposes of this suit are its high water "flux" rate and its high salt "rejection" rate.

FilmTec alleges that Hydranautics has developed an infringing product, the CPA2 membrane. The CPA2 has been patented in the United States, patent no. 4,-872,984, to John Tomaschke, who assigned the patent to Hydranautics. The product has been marketed in the United States since early 1990. Hydranautics has successfully competed with FilmTec for a number of major contracts. FilmTec and Hydranautics agree that the CPA2 has flux rates and rejection rates comparable to the FT-30, and that the product is a strong competitor for the FT-30.

To obtain a preliminary injunction pursuant to 35 U.S.C. § 283 FilmTec must establish a right thereto in light of four factors:

> (1) a reasonable likelihood of success on the merits; (2) irreparable harm; (3) the balance of hardships tipping in its favor; and (4) the impact of the injunction on the public interest.
>
> *Hybritech, Inc., v. Abbott Laboratories,* 849 F.2d 1446, 1451 (Fed. Cir. 1988)

No single factor is dispositive; rather, the court is to weigh the equities and "measure each factor against the

other factors and against the form and magnitude of the relief requested." *Id.*

Reasonable Likelihood of Success on the Merits

FilmTec must establish a reasonable likelihood of success on the merits with respect to patent validity and patent infringement. *Hybritech* at 1451. Although Hydranautics reserves its right to raise the issue of patent validity at a later point in the proceedings, at this time validity has not been put in issue.

To prevail on its claim of infringement, FilmTec must show a reasonable likelihood that it will prove infringement at trial by a preponderance of the evidence. *Hughes Aircraft v. United States,* 717 F. 2d 1351, 1361 (Fed. Cir. 1983). There is no requirement that infringement be proven beyond question or that there be no evidence supporting the view of the accused infringer. However, FilmTec must make a strong showing that the evidence will be in its favor.

Before addressing specifically the court's findings as to infringement of the '344 patent, some discussion of the chemistry of the FT-30 and the CPA2 membrane is required.

The essential components of the FT-30 are the polyamine "m-phenylene diamine," ("MPD") and the polyfunctional acylhalide "trimesoyl chloride" ("TMC"). These components react through a process of interfacial condensation to form a membrane upon a polysulfone support.

The CPA2 is manufactured in a similar fashion to the FT-30. The major difference, and the difference in contention between the parties, is that Hydranautics substitutes a diacylhalide, "isophthayol chloride" ("IPC"), for 60% of the TMC and then adds an amine sale, TEACSA, to the solution, along with the MPD.

FilmTec argues that Hydranautics has boldly copied the '344 patent, and that the 60/40 mixture of IPC/TMC literally infringes the claims of the patent. FilmTec also argues that the CPA2 is an infringing product under the doctrine of equivalents.

FilmTec makes three arguments in support of its claim of literal infringement. First, FilmTec argues that Claim 6 of the '344 patent describes the final composition of the product as being made up of TMC and MPD, with up to 50% of the TMC being replaceable with a component similar in chemical structure to IPC. The evidence suggests that the final composition of the CPA2 and the FT-30 is very similar, if not identical. Therefore FilmTec claims that the patent is infringed because the CPA2 membrane as a final product is within the patent as claimed.

Hydranautics responds that Claim 6 describes the percentage of IPC and TMC in the reactant mixture, not in the final product. Therefore, they argue, since they replace more than 50% of the TMC with the IPC, they are outside of the scope of the patent.

The court finds that Claim 6 describes the reactant mixture and not the percentages of these reactants found in the final product. The relevant language of Claim 6 reads a ". . . desalinizing membrane comprising the interfacial condensation product of the components consisting essentially of: Ar $(COX)_3$ . . . up to about 50% by weight of said $AR(COX)_3$ being replaceable with the compound $Ar(COX)_2$." FilmTec argues that this language does not refer to the mix of the components but to the interfacial reaction product. Reference is made later in Claim 6 to the interfacial reaction product.

The Court finds that language in the "Detailed Description" portion of the patent at column 9 clarifies what the inventor was describing in Claim 6. The relevant language states "In the detailed description which follows,

the preferred starting materials will first be described . . . Although up to about 50% by weight of the amine-reactive component can comprise a dicarboxylic acide halide, a polycarboxylic acid halide with a functionality of at least three should be present for adequate cross-linking . . ." This language very clearly describes a substitution of a reactant such as the IPC for up to 50% of the TMC. While FilmTec correctly observes that the words "starting materials" and "reaction system" appear in column 9 but not in Claim 6, when read in its entirety, the language in column 9 describes the components as claimed in Claim 6.

Both FilmTec and Hydranautics present expert testimony, some of it indeed from the same experts, to support their interpretation of Claim 6. The court finds that it is not necessary to resort to any expert interpretation. The court is to look to the words of the claim to determine if there has been infringement. *E. I. du Pont de Nemours & Co. v. Phillips Petro.* 849 F. 2d 1430, 1433 (Fed. Cir, 1988). Without placing any limitations on the claim, the court may use the specifications to help interpret a word or phrase. *Id.* When Claim 6 is read with the aid of the language in the detailed description found at column 9, the court finds that the Claim describes the reactant mixture, and that therefore Hydranautics does not literally infringe on the basis of the nature of the claimed reactant mixture.

FilmTec's second argument of literal infringement is that even if the "up to about 50%" figure refers to the starting components, that in fact this should be interpreted to cover Hydranautics' 60% mixture, as the 50% figure was not meant to describe a precise amount, FilmTec cites to a number of cases in which courts have found infringement even though the infringing product was manufactured to specifications that did not match the claimed specifications. *See Kolene Corp. v. Motor City Metal Treating, Inc.,* 307 F. Supp. 1251 at 1258

(E. D. Mich. 1969) *aff'd* 440 F. 2d 77 (6th Cir. 1971), *cert. denied*, 404 U.S. 886 (1971), and *S.C. Johnson & Son v. Carter-Wallace, Inc.* 614 F. Supp. 1278 at 1307 (D.C.N.Y. 1985).

The central question in both *Kolene* and *S.C. Johnson* was whether the product manufactured with different percentages of the claimed substances was still within the patent claim because it performed "the same function in substantially the same way to obtain the same result". *Johnson* at 1308. The courts looked to whether the inventor was claiming a particular percentage because mixtures above (or below) that percentage would yield an inadequate product. If so, the alleged infringer who achieves a good product by adjusting the percentages but adding no other innovations or improvement to the patented invention, is in fact infringing the patent.

The parties agree that the "up to 50%" limitation in the claim reflects Cadotte's conclusion that if you substituted more than 50% of the TMC with a diacyl halide the performance of the membrane would be compromised. The evidence before the court confirms Cadotte's conclusion. Hydranautics only achieved a comparable, perhaps superior, membrane with the addition of the TEACSA to the 60/40 mixture.

FilmTec attempts to dispute this evidence by pointing to tests performed by Dr. Lesan of Hydranautics which indicate that under certain conditions a 60/40 membrane without TEACSA had comparable salt and rejection rates to the FT-30. The court is troubled by FilmTec's showing. First, although presumably FilmTec has ample scientific staff at its disposal, it presented none of its own experimental evidence to support its contention that a 60/40 mix produces a membrane comparable in performance to the FT-30. FilmTec does have the burden of showing a reasonable likelihood of success on the merits of its case. Second, the Cadotte patent measures the performance of the membrane with salt water, not brack-

ish water, yet the questioned Lesan experiments are with brackish water. On this argument at this time FilmTec has not shown a reasonable likelihood of proving infringement at trial by a preponderance of the evidence.

FilmTec attempted at some length at the hearing to establish that Hydranautics tried to hide those Lesan experiments which showed some good results with a 60/40 membrane when tested with brackish water. The court does not find on this record that Hydranautics intentionally misled the court.

FilmTec's third argument is that over the course of the entire production process in Japan, Hydranautics uses IPC and TMC at a ratio which is in fact within the patent claim. The polysulfone support for the membrane moves through a "bath" of a MPD/ IPC/ TMC/ TEACSA mixture. The membrane forms on the surface of the polysulfone. The Japanese manufacturer adds a solution of IPC and TMC to the bath as the membrane is being formed. The TMC is added at a higher ratio because it reacts more quickly than the IPC and must be therefore added in greater quantities to maintain the 60/40 mix in the bath.

FilmTec claims that the relevant ratio is the amounts of the reactants "used" in the aggregate. It adds up the amounts of each chemical used throughout the manufacturing process, and claims that you get less than a 50/50 mix of IPC/TMC because of the TMC added to the bath to supplement the TMC being used up in the reaction. Hydranautics maintains that the overall ratio of the solution *in the bath* is maintained at 60/40 IPC to TMC, and that this ratio is the relevant ratio on the issue of infringement.

The court finds that the relevant ratio is the ratio in the bath, not the aggregate amount of all chemicals "used" in the process. The court has found that Claim 6 describes the percentages to be used in the reactant mix-

ture. It is not disputed that the reaction takes place in the bath. Therefore the ratio of the mixture in the bath is the ratio that concerns the court.

FilmTec also argues infringement under the doctrine of equivalents. Both parties cite to *Atlas Powder Co. v. E.I. DuPont de Nemours,* 750 F. 2d 1569 (Fed. Cir. 1984) as controlling authority for their position. In *Atlas Powder,* the court described this doctrine: "designed to protect a patentee from an infringer who appropriates the invention but avoids the literal language of the claim, the doctrine allows a finding of infringement when the accused product and claimed invention perform substantially the same function in substantially the same way to yield substantially the same result." *Id.* at 1579. That court considered a similar situation: a patented chemical mixture was allegedly infringed by a mixture which changed one of the ingredients to achieve a product with almost identical properties. The district court, while referencing the "function, way and result" test, had based its finding into an inquiry as to whether the changed ingredient had the same "purpose, quality and function" as the claimed ingredient. *Id.* at 1580.

The issue is not whether the membranes themselves perform substantially the same function in substantially the same way to yield substantially the same result. Although Hydranautics represents that its membrane is in fact of a better quality than the FT-30, there is not sufficient evidence in the record for this court to find that the CPA2 is in fact a markedly superior product. However, substantial similarity in the product does not create the presumption that they achieve the similar function or result in the same way. *See Universal Gym Equipment v. ERWA Exercise Equipment* 827 F. 2d 1542 (Fed. Cir. 1987).

The issue the court must decide is whether ingredients used by Hydranautics in this reaction perform substantially the same function in substantially the same way to

yield substantially the same result as the claimed ingredients. The function of the group of chemicals used by Hydranautics is the same: they form a membrane through interfacial condensation. But there is no clear indication in the record just in what way the TEACSA contributes to the reaction. FilmTec argues that the TEACSA has no real purpose in the reaction. In support of that position FilmTec presents the deposition testimony of Dr. Tomaschke of Hydranautics in which he states that the TEACSA is "washed away" since its not part of the reaction. Hydranautics argues that the addition of the TEACSA is what makes the 60/40 mixture of IPC and TMC "work", and that without the TEACSA, the 60/40 mixture does not yield a commercially viable product. It cannot explain why the addition of the TEACSA improves the 60/40 mixture, but the court is satisfied that it does, and that it does so in a way not anticipated or taught by the Cadotte patent.

FilmTec may be able to prove at trial that the TEACSA plays no role in the reaction and is "washed away" in Japan. But the scientific significance of Dr. Tomaschke's statements cannot be evaluated at this time without further testimony and evidence. Hydranautics' experiments do indicate that the addition of the TEACSA to the 60/40 mixture, for whatever reason, produces a commercially viable product. Without the TEACSA, the membrane produced with the 60/40 mixture is not commercially viable.

And this is an unexpected result. It is the TEACSA which appears to make the 60/40 reaction produce a viable product. As noted in *Atlas*, if an unexpected result is achieved by the substitution of a different chemical, there may be a finding of no equivalence. *Id.* at 1580, n. 3. In this case there was an unexpected result.

FilmTec urges the court to find willful infringement, as well as literal infringement. Hydranautics did not present any evidence in the record that it consulted patent

counsel before proceeding to manufacture the CPA2. As the court does not find that FilmTec has made a strong showing of infringement of the patent, the court does not need to reach this issue.

Irreparable Harm

FilmTec argues that irreparable harm in this case should be presumed, as they have made a clear showing of infringement. *H.H. Robertson Co. v. United Steel Deck, Inc.* 820 F. 2d 384, 390 (Fed. Cir. 1987). The court has not found a clear or strong showing of infringement, so FilmTec does not have the advantage of the presumption on that ground. The irreparable harm claimed by FilmTec includes loss of business opportunities, future profits, and the opportunity to sell the FT-30 at the price set by FilmTec.

The court is mindful of the Federal Circuit's guidance on this issue in *Illinois Tool Works, Inc. v. Grip-Pak, Inc,* 906 F. 2d 679 (Fed. Cir. 1990). While these losses are compensable should FilmTec prevail at trial, and there is no evidence that Hydranautics would not be able to pay the damages after trial, this factor alone should not lead the court to decide the issue of irreparable harm in favor of or against FilmTec. *Id.* at 683. Although Hydranautics presents evidence that FilmTec has licensed the patent overseas, there is no indication that FilmTec has granted any licenses under the patent in the United States. Therefore, they have protected their rights to be the sole product on the market.

The primary harm to FilmTec appears to be the setting of a price structure which is below that of the prices charged by FilmTec before the entrance of Hydranautics into the business. The court is not persuaded that this harm is irreparable. Should FilmTec prevail at trial, it will have the only product on the market and it will be able to set its price at what it feels is the "deserved price". The losses from the period of competitive pricing

can be compensated at that time. Further, the court is prepared to move this case quickly to trial. Speedy resolution of this dispute should help to mitigate the damages.

Balance of Hardships

In balancing the hardships, the court is to take into account all of the factors that enter into weighing the equities in granting the preliminary injunction. The likelihood of success on the merits is a factor in this decision, but not controlling. FilmTec argues it will suffer damages and hardship if the injunction is not granted because it will have to compromise its price for the FT-30. Hydranautics in its pleading states that it will shut down if enjoined from selling the CPA2, but presents no evidence, even by affidavit, of this eventuality.

The court does not find that the balance tips in FilmTec's favor, as indeed these losses are compensable and the court will do what it can to minimize the hardship by facilitating a speedy trial. As to Hydranautics, the court is skeptical of calamitous claims absent some showing to support the claim, but is cognizant of the precarious nature of Hydranautics business given its recent entry into this market.

The Public Interest

FilmTec argues the public interest lies in protecting the patent system, and that therefore the preliminary injunction should be granted. As they have not made a strong showing of a probability of success on the merits, this argument cannot be given great weight. Further, as noted in *Illinois Tool*, the public interest also lies in protecting Hydranautics' right to compete, if the patent is not being infringed. *Id* at 684.

Hydranautics also argues that the public interest lies in having access to these products at competitive prices, as these products can help provide a "reliable, economical

and high quality water supply." The court does not have the resources or the expertise to evaluate the proper course of public policy in this area. While the availability of more than one product may indeed benefit the public, the court will limit its evaluation to the interest of the public in having the patent laws enforced in an equitable fashion. At this stage of the proceedings, the court finds that plaintiff's have not met their burden, and thus preliminary injunction will not be granted.

IT IS SO ORDERED.

/s/ Gordon Thompson, Jr.
GORDON THOMPSON, JR.
United States District Judge

Dated: September 7, 1990

APPENDIX D

UNITED STATES COURT OF APPEALS

92-1091

FILMTEC CORPORATION,
Plaintiff-Appellee,

v.

HYDRANAUTICS,
Defendant-Appellant.

ORDER

A combined petition for rehearing and suggestion for rehearing in banc having been filed by the APPELLEE, and a response thereto having been invited by the court and filed by the APPELLANT, and the petition for rehearing having been referred to the panel that heard the appeal, and thereafter the suggestion for rehearing in banc and response having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, DENIED, and it is further

ORDERED that the suggestion for rehearing in banc be, and the same hereby is, DECLINED.

The mandate of the court will issue on March 25, 1993.

FOR THE COURT,
FRANCIS X. GINDHART,
Clerk

By /s/ Diane M. Frye
DIANE M. FRYE
Chief Deputy Clerk

Dated: March 18, 1993

APPENDIX E

35 U.S.C. § 100(d) provides:

> The word "patentee" includes not only the patentee to whom the patent was issued but also the successors in title to the patentee.

35 U.S.C. § 261 provides:

> Subject to the provisions of this title, patents shall have the attributes of personal property.
>
> Applications for patent, patents, or any interest therein, shall be assignable in law by an instrument in writing. The applicant, patentee, or his assigns or legal representatives may in like manner grant and convey an exclusive right under his application for patent, or patents, to the whole or any specified part of the United States.
>
> A certificate of acknowledgement under the hand and official seal of a person authorized to administer oaths within the United States, or, in a foreign country, of a diplomatic or consular officer of the United States, or an officer authorized to administer oaths whose authority is proved by a certificate of a diplomatic or consular officer of the United States, or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States, shall be prima facie evidence of the execution of an assignment, grant or conveyance of a patent or application for patent.
>
> An assignment, grant or conveyance shall be void as against any subsequent purchaser or mortgagee for a valuable consideration, without notice, unless it is recorded in the Patent and Trademark Office within three months from its date or prior to the date of such subsequent purchase or mortgage.

35 U.S.C. § 281 provides:

> A patentee shall have remedy by civil action for infringement of his patent.

42 U.S.C. § 5908(a) provides:

> Whenever any invention is made or conceived in the course of or under any contract of the Administration, other than nuclear energy research, development, and demonstration pursuant to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) and the Administrator determines that
>
> > (1) the person who made the invention was employed or assigned to perform research, development, or demonstration work and the invention is related to the work he was employed or assigned to perform, or that it was within the scope of his employment duties, whether or not it was made during working hours, or with a contribution by the Government of the use of Government facilities, equipment, materials, allocated funds, information proprietary to the Government, or services of Government employees during working hours; or
> >
> > (2) the person who made the invention was not employed or assigned to perform research, development, or demonstration work, but the invention is nevertheless related to the contract or to the work or duties he was employed or assigned to perform, and was made during working hours, or with a contribution from the Government of the sort referred to in clause (1).
>
> title to such invention shall vest in the United States, and if patents on such invention are issued they shall be issued to the United States, unless in particular circumstances the Administrator waives all or any

part of the rights of the United States to such invention in conformity with the provisions of this section.

Section 6(d) of the Saline Water Conversion Act of 1971, Pub. L. No. 92-60, 85 Stat. 159 (1971), provided:

> All research within the United States contracted for, sponsored, cosponsored, or authorized under authority of this Act, shall be provided for in such manner that all information, uses, products, processes, patents, and other developments resulting from such research developed by Government expenditure will (with such exceptions and limitations, if any, as the Secretary may find to be necessary in the interest of national defense) be available to the general public. This subsection shall not be so construed as to deprive the owner of any background patent relating thereto of such rights as he may have thereunder. Within six months of the date of this Act, the Secretary shall publish rules in the Federal Register to give effect to the provisions of this subsection and shall subsequently publish all revisions in the same manner.